32nd Annual Meeting of the

Southeast Deer Study Group

Herds Without Hunters: The Future of Deer Management?

February 22-24, 2009
Hotel Roanoke & Conference Center
Roanoke, Virginia

Hosted by the

Virginia Department of Game and Inland Fisheries

and the

Conservation Management Institute at Virginia Tech

WELCOME

The Virginia Department of Game and Inland Fisheries and the Conservation Management Institute at Virginia Tech welcome you to the 32nd Annual Southeast Deer Study Group Meeting in Roanoke, Virginia.

We would like to thank the following companies and organizations for their generous donations and contributions to this meeting. Organizations are listed alphabetically within each giving level (* = exhibitors).

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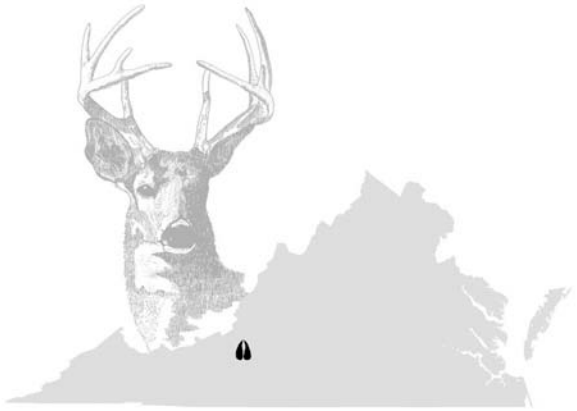
THE SOUTHEAST DEER STUDY GROUP

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.

TWS PROFESSIONAL DEVELOPMENT

The 32nd Annual Southeast Deer Study Group meeting can be counted as contact hours for Professional Development/Certification. Each hour of actual meeting time counts as one credit hour (no social time credit). For more information about professional development, visit The Wildlife Society web site, www.wildlife.org.



SOUTHEAST DEER STUDY GROUP MEETINGS

Year	Location	Meeting Theme
1977	Fort Pickett, 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 '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 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 Versus Illusion
2001	St. Louis, MO	From Lewis & 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	

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
North Carolina	Evin Stanford	North Carolina Wildlife Resources Commission
North Carolina	Perry Sumner	North Carolina Wildlife Resources Commission
Oklahoma	Kenneth L. Gee	The Noble Foundation
Oklahoma	Jerry Shaw	Oklahoma Department of Wildlife Conservation
South Carolina	David C. Guynn, Jr.	Clemson University
South Carolina	Charles Ruth	South Carolina Department of Natural Resources
Tennessee	Ben Layton	Tennessee Wildlife Resources Agency
Tennessee	Daryl Ratajczak	Tennessee Wildlife Resources Agency
Texas	Mitch Lockwood	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

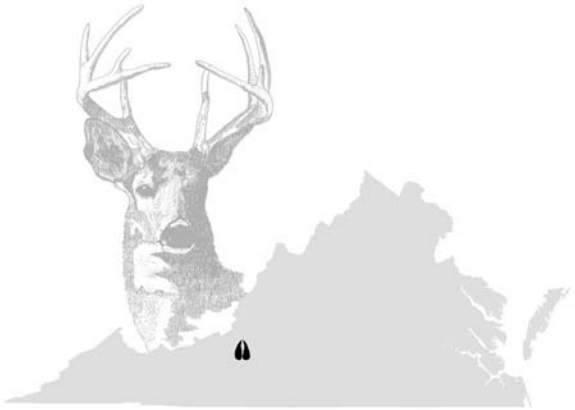
SOUTHEAST DEER STUDY GROUP AWARDS

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 DeYoung
2005 – Kent E. Kammermeyer
2006 – William E. "Bill" Armstrong
2007 – Jack Gwynn

Outstanding Student Presentation Award

1996 – Billy C. Lambert, Jr. (Texas Tech University)
1997 – Jennifer A. Schwartz (University of Georgia)
1998 – Karen Dasher (University of Georgia)
1999 – Roel R. Lopez (Texas A&M University)
2000 – Karen Dasher (University of Georgia)
2001 – Roel R. Lopez (Texas A&M University)
2002 – Randy DeYoung (Mississippi State University)
2003 – Bronson Strickland (Mississippi State University)
2004 – Randy DeYoung (Mississippi State University)
2005 – Eric Long (Penn State University)
2006 – Gino D'Angelo (University of Georgia)
2007 – Sharon A. Valitzski (University of Georgia)
2008 – Cory L. Van Gilder (University of Georgia)



PROGRAM AGENDA

32nd ANNUAL
SOUTHEAST DEER STUDY GROUP MEETING
Roanoke, VA
February 22-24, 2009

Sunday February 22, 2009

12:00 - 6:00 Registration, *North Entry Foyer*
1:00 - 9:00 Exhibits, *Roanoke Foyer*
3:00 Southeast Deer Committee Meeting, *Shenandoah B Room*
6:00 - 9:00 Appalachian Welcome Social and Dinner, *Roanoke Ballrooms A & B*

Monday February 23, 2009

7:00 - 12:00 Registration, *North Entry Foyer*
8:00 - 9:00 Exhibits, *Roanoke Foyer*

All sessions, *Roanoke Ballrooms C & D*

Plenary Session - Herds without hunters: the future of deer management?
Moderator: James A. Parkhurst - Virginia Tech

8:00 **Welcome**
Robert W. Duncan, Director, Virginia Department of Game and Inland Fisheries

8:30 **Herds without hunters: the future of deer management?**
David C. Guynn, Jr. - Clemson University

8:50 **The public and deer management**
Mark Damian Duda - Responsive Management

9:10 **Expansion of human development and potential impacts on deer management**
Clayton K. Nielsen - Southern Illinois University

9:30 **State of the whitetail: trends in harvest and population dynamics**
Kip P. Adams, Matt Ross, Joe Hamilton, Brian Murphy - Quality Deer Management Association

9:50 BREAK

Technical Session I
Moderator: Charlie Killmaster - Georgia Department of Natural Resources

10:10 Announcements / Door Prizes

10:20 **Suburban support for deer management in Howard County, Maryland, parks**
Philip C. Norman - Howard County Department of Recreation and Parks

10:40 **Recruitment of women hunters: an opportunity for growth**
Susan T. Guynn - Clemson University; Brenda Valentine - BassPro; Denise Anderson - Clemson University

11:00 **DeerPeace: a practical alternative for deer management in the suburbs**
M. David Feld - GeesePeace

11:20 **Market hunting: defining deer hunters through applications of target market segmentation**
Craig A. Miller - University of Georgia

11:40 **Suburban deer reduction: the managed archer option**
Joseph D. Maddock - Eccologix; C. J. Winand - U.S. Army

12:00 LUNCH (On your own)

Technical Session II
Moderator: Mitch Lockwood - Texas Parks and Wildlife Department

1:30 Announcements / Door Prizes

1:40 ***Intracranial abscessation as a natural mortality factor in adult male white-tailed deer**
Gabriel R. Karns, Richard A. Lancia, Christopher S. DePerno - North Carolina State University; Mark C. Conner - Chesapeake Farms; Michael S. Stoskopf - North Carolina State University

2:00 ***Deer check stations help define disease distribution: implications for Lyme disease risk in Tennessee**
Michelle E. Rosen, Graham J. Hickling - University of Tennessee; Jean I. Tsao - Michigan State University

* student paper

2:20 **Incidence of Hemorrhagic disease in Virginia is associated with winter and summer climatic conditions**
Jonathan M. Sleeman, Jay E. Howell, W. Matthew Knox - Virginia Department of Game and Inland Fisheries; Philip J. Stenger - University of Virginia

2:40 ***Male or female? Molecular evaluation of fetal sexing in white-tailed deer**
Angeline Zamorano - Caesar Kleberg Wildlife Research Institute; Bronson K. Strickland - Mississippi State University; Randy W. DeYoung - Caesar Kleberg Wildlife Research Institute; Steve Demarais - Mississippi State University; Chad M. Dacus - Mississippi Department of Wildlife, Fisheries, and Parks

3:00 BREAK

Technical Session III
Moderator: Brad Miller - Arkansas Game and Fish Commission

3:20 Announcements / Door Prizes

3:30 ***Population characteristics of white-tailed deer in a bottomland hardwood forest of south-central Louisiana**
Justin W. Thayer, Michael J. Chamberlain - Louisiana State University; Scott R. Durham - Louisiana Department of Wildlife and Fisheries

3:50 ***Relationship between movements and body characteristics of male white-tailed deer**
Aaron M. Foley, David G. Hewitt, Randy W. DeYoung - Caesar Kleberg Wildlife Research Institute; Mickey W. Hellickson - King Ranch; Ken L. Gee - Samuel Roberts Noble Foundation; Karl V. Miller - University of Georgia; Mitch A. Lockwood - Texas Parks and Wildlife Department.

4:10 ***Unusual movements by adult female white-tailed deer**
Jeffrey J. Kolodzinski - University of Georgia; Larry V. Tannenbaum - U.S. Army Aberdeen Proving Ground, MD; Lisa I. Muller - University of Tennessee; Mark C. Conner - Chesapeake Farms; W. Mark Ford - USDA Forest Service Northern Research Station; Kent A. Adams - National Wild Turkey Federation; David A. Osborn, Karl V. Miller - University of Georgia

4:30 ***Measuring fine-scale white-tailed deer movements and environmental influences using GPS collars**
Stephen L. Webb, Bronson K. Strickland - Mississippi State University; Kenneth L. Gee - Samuel Roberts Noble Foundation; Stephen Demarais - Mississippi State University; Randy W. DeYoung - Caesar Kleberg Wildlife Research Institute

* student paper

4:50 ***Characteristics that determine activity thresholds in white-tailed deer**
Dean W. Wiemers, Timothy E. Fulbright, Alfonso Ortega-Santos, Allen Rasmussen - Caesar Kleberg Wildlife Research Institute

5:10 DINNER (On your own)

Shoot From The Hip:
Moderator: David Steffen - Virginia Dept. of Game and Inland Fisheries

6:30 - 7:00 Social, *Roanoke Ballrooms C & D*

7:00 - 9:00 **Traditions too deer: Leopold's split-rail values or obstacles to deer management?**
Harry Jacobson - Mississippi State University (Retired)
Karl. V. Miller - University of Georgia

Tuesday February 24, 2009

8:00 - 5:00 Exhibits, *Roanoke Foyer*

Technical Session IV
Moderator: Tina Brunjes - Kentucky Department of Fish and Wildlife Resources

8:00 Announcements / Door Prizes

8:10 ***Using fractal analyses to characterize movement paths of white-tailed deer and response to spatial scale**
Stephen L. Webb, Samuel K. Riffell - Mississippi State University; Kenneth L. Gee - Samuel Roberts Noble Foundation; Stephen Demarais - Mississippi State University

8:30 ***Impact of hunting pressure on adult male white-tailed deer behavior at Chesapeake Farms, Maryland**
Gabriel R. Karns, Richard A. Lancia, Christopher S. DePerno - North Carolina State University; Mark C. Conner - Chesapeake Farms

8:50 ***Behavioral responses of captive deer to physical and visual barriers designed to minimize deer-vehicle collisions**
Daniel W. Stull, David A. Osborn, William D. Gulsby - University of Georgia; David M. Jared - Georgia Department of Transportation; Gino J. D'Angelo, Shane B. Roberts - University of Georgia; George R. Gallagher - Berry College; Robert J. Warren, Karl V. Miller - University of Georgia

* student paper

9:10 ***Evaluation of the Pennsylvania sex-age-kill model for white-tailed deer**
Andrew S. Norton, Duane R. Diefenbach - Pennsylvania State University; Christopher S. Rosenberry, Bret D. Wallingford - Pennsylvania Game Commission

9:30 ***Utility of trail camera users to assess deer population sex and age structure**
Johnathan Slade - University of Central Missouri; Lonnie Hansen - Missouri Department of Conservation; Victoria Jackson, Chad King, Kurt Dean - University of Central Missouri

9:50 BREAK

Technical Session V
Moderator: Daryl Ratajczak - Tennessee Wildlife Resources Agency

10:10 Announcements / Door Prizes

10:20 ***Changes in forest understory communities following white-tailed deer exclusion**
Kelley L. Flaherty, James T. Anderson - West Virginia University; James Crum - West Virginia Division of Natural Resources

10:40 ***Biodiversity of supplemental wildlife plantings and thinned and burned pine habitats in South Carolina**
Marguerite E. Porter, David C. Guynn, Jr., Joseph D. Lanham - Clemson University; Hugh R. Still, Jr. - South Carolina Department of Natural Resources; Greg K. Yarrow, J. Rickie Davis - Clemson University

11:00 ***Available deer forage following various silvicultural treatments in mature mixed hardwood forests**
Marcus A. Lashley, Craig A. Harper, Gary E. Bates - University of Tennessee

11:20 ***Predation and white-tailed deer recruitment in southwestern Georgia**
M. Brent Howze, Robert J. Warren - University of Georgia; L. Mike Conner - Joseph W. Jones Ecological Research Center; Karl V. Miller - University of Georgia

11:40 ***Assessing effects of supplemental feeding on selective foraging in white-tailed deer using stable isotopes ($\delta^{13}C$)**
Ryan L. Darr, David G. Hewitt, Timothy E. Fulbright, Charles A. DeYoung - Caesar Kleberg Wildlife Research Institute; Don A. Draeger - Comanche Ranch; Kelley M. Stewart - University of Nevada Reno

* student paper

12:00 LUNCH (On your own)

Technical Session VI
Moderator: Joe Rogerson – Delaware Division of Fish and Wildlife

1:30 Announcements / Door Prizes

1:40 **Condensed tannins and deer forage quality in Mississippi**
Phillip D. Jones, Brian Rude - Mississippi State University; James P. Muir - Texas AgriLife Research; Stephen Demarais, Bronson K. Strickland - Mississippi State University; Scott L. Edwards - Mississippi Department of Wildlife, Fisheries, and Parks

2:00 **When check stations don't exist: a mail survey for biological data collection and hunter interaction**
Christopher D. Kreh, Bradley W. Howard, Mike Carraway - North Carolina Wildlife Resources Commission

2:20 **Wounding rates of white-tailed deer with modern archery equipment**
M. Andy Pedersen - Naval Explosive Ordnance Disposal Technology Division, Indian Head, MD; Seth Berry, Jeffery C. Bossart - Naval Support Facility Indian Head, Indian Head, MD

2:40 **Teaching old dogs new tricks: engaging reluctant stakeholders in balancing property rights and hound-hunting**
Sarah G. Lupis Kozlowski, Steve L. McMullin, James A. Parkhurst – Virginia Tech; David E. Steffen, Nelson W. Lafon - Virginia Department of Game and Inland Fisheries

3:00 BREAK

Technical Session VII
Moderator: Bob Zaiglin – Southwest Texas Junior College

3:20 Announcements / Door Prizes

3:30 **Long-term trends in white-tailed deer reproductive rates from eastern south Texas**
Mickey W. Hellickson - King Ranch

3:50 **Use of GPS-enabled personal digital assistants to collect deer carcass removal data from roadways**
Bridget M. Donaldson - Virginia Transportation Research Council; Nelson W. Lafon – Virginia Department of Game and Inland Fisheries

4:10 **Potential for synergy between white-tailed deer herbivory and invasive plant species in mature deciduous forests**
William J. McShea - Smithsonian Institution; Chad Stewart - Indiana Department of Natural Resources; Norm Bourg - Smithsonian Institution

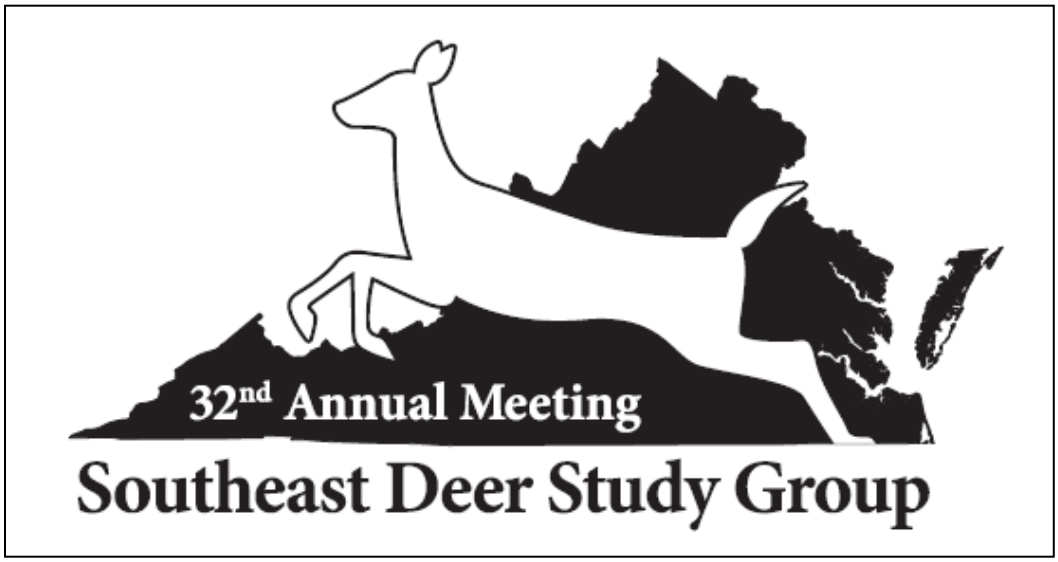
4:30 **The effect of an antler point restriction on harvest of deer in Missouri**
Lonnie D. Hansen - Missouri Department of Conservation

4:50 **Impact of coyotes on fawn survival in South Carolina**
John C. Kilgo - USDA Forest Service Southern Research Station; H. Scott Ray - USDA Forest Service-Savannah River; Matthew J. Goode, Mark A. Vukovich - USDA Forest Service Southern Research Station; Charles Ruth - South Carolina Department of Natural Resources

5:10 Business Meeting, Southeast Deer Committee, *Appalachian Room*

6:00 - 7:00 Social, *Roanoke Foyer*

7:00 - 9:00 Banquet, *Roanoke Ballrooms A & B*



Monday, 8:50

The public and deer management

Mark Damian Duda - Responsive Management

Over the past 20 years, Responsive Management has conducted >20 major studies of the general population, hunters, and landowners and their attitudes toward deer and deer management. This presentation will review what we know about attitudes toward deer management, as well as hunter recruitment and retention. Topics covered include: trends in hunting, in general and regarding deer hunting; public opinion of hunting, including the hunting of deer and other species; attitudes about various types of hunting; hunting motivations; reasons why hunting participation has declined; and research on hunter recruitment and retention.

NOTES:

Monday, 9:10

Expansion of human development and potential impacts on deer management

Clayton K. Nielsen - Southern Illinois University

Human development and resulting conflicts between humans and white-tailed deer (*Odocoileus virginianus*) create several challenges for deer managers. Deer management often is contentious in developed areas, as stakeholders with opposing viewpoints demand input into management decisions. Furthermore, use of hunting as a deer management technique may be constrained in developed areas due to human attitudes against hunting, property access limitations, and safety concerns. Other confounding issues include the difference in human and deer ecology between suburban and exurban areas. Exurbia is a residential land-use that occurs outside city limits, situated among working farms or undeveloped land, where human population density and average property size are intermediate between the suburbs and rural areas. Knowledge of deer management potential in exurbia is important because the human population in these areas of the U.S. increased by 10 million during the 1990s, more than that of urban, suburban, or rural landscapes. Regardless, deer managers need updated information about deer and humans in developed landscapes to improve management programs. In this presentation, I discuss the future of deer management in human-developed areas, given existing trends in human expansion and a review of research on deer ecology and management in suburban and exurban areas. Although deer managers increasingly will need to pursue non-traditional methods of deer management in developed areas due to continuing trends in development, attitudes of suburbanites and exurbanites, and deer ecology, I contend there still is hope for hunting in the hinterlands of our urban centers.

NOTES:

Monday, 9:30

State of the white-tail: trends in harvest and population dynamics

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

Interest in Quality Deer Management (QDM) has increased dramatically during the past decade, a period when many states implemented regulations designed to improve deer herd health and habitat condition or to increase hunter satisfaction. To determine what effect, if any, the regulations may have had, the Quality Deer Management Association conducted a survey of state wildlife agencies and obtained data on deer harvest and population dynamics for the period 1989 to 2008. From 1999 to 2005, the average percentage of yearling bucks in the harvest declined from 51% to 45%, whereas the harvest of antlerless deer increased approximately 10%. By 2008, 22 states had implemented some form of antler restrictions on the harvest of bucks (e.g., statewide restrictions for at least one buck [6]; restrictions imposed only on wildlife management units and/or on military bases [16]; antler spread restrictions [3]; some combination of antler points/spread/beam length [5]). Fawn recruitment rates and the percentage of doe fawns that bred remained relatively constant between 1998 and 2008, whereas the percentage of buck fawns in the harvest declined. Adult sex ratios remained relatively constant or improved between 1998 and 2008; most states averaged 1.5 to 2.5 adult does per adult buck. As acceptance of QDM grows, regulations that selectively restrict or manipulate harvest undoubtedly will continue to shape the future of deer hunting and management throughout North America.

NOTES:

Monday, 10:20

Suburban support for deer management in Howard County, Maryland parks

Philip C. Norman - Howard County Department of Recreation and Parks

Howard County, Maryland, about 251 square miles in area and home to approximately 275,000 people, lies along Interstate 95 half-way between Baltimore and Washington, D.C. White-tailed deer (*Odocoileus virginianus*) populations in the eastern, suburban third of the County exceed 200 deer per square mile on some park properties. The county's Department of Recreation and Parks has conducted managed deer hunts annually since January 1998. Animal rights proponents, who claim to represent the views of most county residents and have conducted protests against these hunts, now seek to end the use of all lethal deer management techniques on County lands.

In April 2008, a computer-assisted telephone survey was conducted to assess county residents' knowledge of and opinions on deer abundance and management (including topics such as Lyme disease and deer-vehicle collisions). The survey had a 3.5% margin of error at a 95 percent level of confidence. Results indicate that residents support legal hunting as a means to manage deer populations in suburban landscapes; the majority of respondents (>80%) expressed support for the use of managed hunts where non-lethal means are not effective. Although 85% of respondents enjoyed seeing deer, 60% believed there were too many deer in the county. For a relatively small, affluent, and well-educated exurban constituency like that of Howard County, most managers probably would not have expected to find a population positively disposed toward lethal means of deer management. However, the majority of respondents in this study expressed support for management policies and practices currently used by the Department of Recreation and Parks. Other suburban jurisdictions may find similar support for managing overabundant deer populations.

NOTES:

Monday, 10:40

Recruitment of women hunters: an opportunity for growth

Susan T. Guynn - Clemson University; Brenda Valentine - BassPro; Denise Anderson - Clemson University

Since 1991, the number of hunting licenses sold in the US has declined by 11%. Although women hunters represent only 9% of total licenses sold, recruitment of women to hunting represents a potential area of growth as the number of licenses sold to women increased by 9% during this period. Effective recruitment of women to hunting will require consideration of issues important to women, such as traditional gender roles, lack of female mentors, lack of opportunities, family-oriented hunting activities, and peer pressure. Many of these issues were identified as potential impediments to women during a Leisure Skills course at Clemson University designed to introduce students to hunting, a course offered since Fall 2003, but as a co-ed class. Although there was great interest by women in the hunting course, few enrolled because of feelings of intimidation by men in the class. It is known that women tend to learn a male-dominated activity better and faster in a female-only environment. To address these concerns, in the Fall Semester 2008, a course was designed and offered to introduce women to hunting. The objective of the class was to provide women an opportunity to learn to hunt in a female-only environment and to discuss issues specific to women who choose to hunt. The lessons learned from the class will be discussed along with recommendations for teaching/recruitment strategies by universities and non-governmental organizations.

NOTES:

Monday, 11:00

DeerPeace: a practical alternative for deer management in the suburbs

M. David Feld - GeesePeace

DeerPeace is a "systems engineering" approach to reduce deer conflicts in communities. A pilot project now is underway in northern New Jersey to work out implementation details. The DeerPeace program combines proven and emerging technologies so that each component is more effective in combination than if used alone. The DeerPeace pilot began in spring 2008 and will continue until 2010.

Coordinated Strategy 1 draws deer to the interior of urban or community forested areas or woodlands to "Intercept Meadows," which are similar to traditional open spaces used by hunters to attract deer. These open spaces increase the amount of forest edge in the interior of the forest and create areas with vegetation that deer prefer. They also keep deer away from the exterior edge of the forest where the conflicts with people are most likely.

Coordinated Strategy 2 seeks to eliminate deer ticks. Deer will be treated with insecticide when they eat corn from '4-Poster' delivery systems developed by the USDA. The '4-Poster' systems will be located in the "Intercept Meadows."

Coordinated Strategy 3 attempts to stabilize the deer population using contraceptive techniques, when such methods are authorized by state wildlife agencies. Contraceptives will be delivered via darting by trained marksmen operating from raised platforms located around the "Intercept Meadows."

The DeerPeace program anticipates "Herds *with* Hunters," where hunters could play an important role in developing the urban forest "Intercept Meadows" and darting deer in the suburbs.

NOTES:

Monday, 11:20

Market hunting: defining deer hunters through applications of target market segmentation

Craig A. Miller - University of Georgia

Managers traditionally viewed deer hunters as a homogenous group. Although such perceptions have changed in recent years, managers need to understand the complex interactions among hunter experience, expectations, motivations, and satisfactions if they are to better employ deer hunting as a white-tailed deer (*Odocoileus virginianus*) management tool. This paper presents a modeling approach used to define market segmentation among deer hunters in Illinois. Data were collected via self-administered mail survey of a random sample of 4,500 deer hunters throughout the state; 80% of hunters surveyed responded. Hunters were asked to respond to Likert-type statements that assessed experience, harvest importance and success, self-assessed skill level, and commitment. Principal Components Analysis (PCA) provided 3 segments identified as "Lifestyle/Commitment," "Skill/Challenge," and "Harvest." To provide an example of applications of this typology to deer management, a series of 1-way Analysis of Variance models were developed that compared the "Lifestyle/Commitment" component to statements regarding trophy deer management. Significant differences were found across 4 commitment levels for all statements: importance of harvesting a trophy buck ($F=36.53$, $p<0.001$), resist shooting smaller bucks ($F=48.33$, $p<0.001$), doe harvest ($F=26.81$, $p<0.001$), and providing food plots ($F=11.64$, $p<0.001$). Management implications include understanding segmentation among deer hunters and associated preferences for deer management. Through application of the typology approach, managers can better understand differing levels of support or opposition to management efforts.

NOTES:

Monday, 11:40

Suburban deer reduction: the managed archer option

Joseph D. Maddock - Eccologix; C. J. Winand - U.S. Army

Eccologix, LLC, formed in 2006, developed and implemented a deer management plan that significantly reduced deer populations in Upper Makefield Township, a suburb of Philadelphia, PA. The plan is systematic, organized, and utilizes screened and managed recreational archers. The Eccologix plan demands education, communication, and intense management as its foundation.

Eccologix used harvest report cards at check stations to collect and compile harvest data (i.e., weight, age) for biological analysis. First-year results have been impressive. Thirty-three Eccologix-certified archers harvested 443 deer during the 2007/2008 hunting season, 99% (439) of which were antlerless. Overall, all archers associated with the Eccologix program (including other Eccologix "cooperative" hunters) harvested 568 deer, 443 (77.3%) of which were female. In 2006/2007, the year prior to program implementation, only 118 deer were harvested in Upper Makefield Township (Pennsylvania Game Commission statistics); in 2007/2008, the season of program implementation, 700 deer were harvested. Road-killed deer picked up by Game Commission contractors in the township dropped 44% from 2006 to 2007. Eccologix surveyed 59 participating landowners and received 45 completed surveys (a 76% return rate). Results indicate that the program caused very little inconvenience to landowners, wounding was not an issue, deer sightings dropped substantially (about 20% on average), and satisfaction among managers and archers was very high (90% rated "very satisfied" or "exceptional").

NOTES:

Monday, 1:40

***Intracranial abscessation as a natural mortality factor in adult male white-tailed deer**

Gabriel R. Karns, Richard A. Lancia, Christopher S. DePerno - North Carolina State University; Mark C. Conner - Chesapeake Farms; Michael S. Stoskopf - North Carolina State University

Intracranial abscessation is a cause of natural mortality among free-ranging white-tailed deer (*Odocoileus virginianus*) across portions of the United States and Canada. Intracranial abscesses caused by *Arcanobacterium pyogenes* disproportionately affect adult male white-tailed deer. From 2003 to 2008, we assessed the occurrence of intracranial abscessation among adult (≥ 2.5 years) male radio-collared male white-tailed deer (n=33) at Chesapeake Farms, Kent County, Maryland. We documented mortality and necropsied 26 of the 33 deer. In 2007, we collected swab samples from the base of antlers and nasopharyngeal membranes of additional living male white-tailed deer in Maryland (n=9) and Texas (n=10). We also collected swab samples from freshly rubbed (n=7) and randomly selected un-rubbed (n=7) trees in Maryland. Swabs were cultured for the presence/absence of *A. pyogenes*. In Maryland, 9 (35%) of the 26 necropsied radio-collared males had intracranial abscesses. Five (56%) of the 9 males from Maryland and none (0%) of 10 males from Texas that were swabbed cultured positive for *A. pyogenes*. All swabs from rubbed and un-rubbed trees at Chesapeake Farms were negative for *A. pyogenes*. The rate of intracranial abscess among adult male white-tailed deer at Chesapeake Farms (35%) exceeds reported rates for other regions of the United States (9%) and could be a serious impediment to successful QDM efforts on the Delmarva Peninsula.

* Student Presentation

NOTES:

Monday, 2:00

***Deer check stations help define disease distribution: implications for Lyme disease risk in Tennessee**

Michelle E. Rosen, Graham J. Hickling - University of Tennessee; Jean I. Tsao - Michigan State University

Lyme disease (LD) is caused by the spirochete, *Borrelia burgdorferi*, which, in the eastern United States, is transmitted by the bite of the black-legged tick, *Ixodes scapularis*. Whether LD is endemic in Tennessee and adjacent states has been a topic of much recent debate, in part because current tick distribution maps suggest that *I. scapularis* rarely is found in this region. In 2006 and 2007, we investigated the distribution, abundance, and pathogen status of this tick species in Tennessee through examination of ticks collected from hunter-harvested deer at check stations across the state. We detected adult *I. scapularis* in 20 Tennessee counties that had no prior occurrence records for this tick. In central Tennessee (Regions 2 and 3), 31% of 172 deer checked were infested with *I. scapularis*. Harvest locations of heavily-infested deer led us to study sites where we undertook monthly surveys for all life stages of *I. scapularis* host-seeking in vegetation. The resulting phenology enabled us to show, for the first time, that nymphal *I. scapularis* ticks in Tennessee exhibit the same kind of host-seeking behavior that results in elevated risk of human LD in the Northeast. Laboratory assays and additional field studies are underway to determine the extent to which the LD pathogen may be present in these Tennessee ticks. The results of these pathogen investigations will be presented and the value of hunter participation in check stations emphasized.

* Student Presentation

NOTES:

Monday, 2:20

Incidence of hemorrhagic disease in Virginia is associated with winter and summer climatic conditions

Jonathan M. Sleeman, Jay E. Howell, W. Matthew Knox - Virginia Department of Game and Inland Fisheries; Philip J. Stenger - University of Virginia

Hemorrhagic disease (HD), an important disease of white-tailed deer (*Odocoileus virginianus*), is caused by epizootic hemorrhagic disease or bluetongue viruses that are transmitted by midges of the genus *Culicoides*. Although this disease is predictable seasonally, it is difficult to predict its emergence annually. Previous studies of bluetongue virus indicate that climatic conditions are important for transmission. We conducted this study to determine if selected climatic conditions were associated with annual incidence of HD in white-tailed deer from Virginia. We calculated the annual percentage of deer with hoof wall growth interruptions (a clinical sign of chronic HD) harvested by hunters who participate in deer management assistance programs from counties in 4 climatic divisions east of the Blue Ridge Mountains (HD endemic area) from 1993 to 2006 and used those values as a standardized indicator of annual HD incidence. We obtained (from the University of Virginia Climatology Office database) monthly average temperature (^{o}F) and total precipitation (inches) data for each of the climatic divisions for the same time period. We calculated Pearson's correlation coefficients between annual HD incidence and temperature or precipitation for each month, as well as for winter (January-February), early summer (June-July), and late summer/fall (August-September-October) seasons. We detected strong correlations between annual HD incidence and average temperature for winter (r=0.39, *P*=0.003, n=57), early summer (r=0.51, *P*<0.0001, n=57), and late summer/fall (r=0.42, *P*=0.001, n=57). There also was a strong inverse correlation between annual HD incidence and June precipitation (r=-0.44, *P*=0.0006, n=57). To further explore these relationships, we developed Poisson regression models of seasonal temperatures and June precipitation to annual HD incidence. Based on Akaike's Information Criterion with small sample size correction (AICc), the global model emerged as the top model. Higher winter and summer temperatures may increase vector capacity and competence. In addition, less precipitation during June may create favorable breeding sites for midges and diminish food and water sources for deer, thus increasing physiological stress. Further studies at multiple spatial scales that include additional climatic factors are warranted.

NOTES:

Monday, 2:40

***Male or female? Molecular evaluation of fetal sexing in white-tailed deer**

Angeline Zamorano - Caesar Kleberg Wildlife Research Institute; Bronson K. Strickland - Mississippi State University; Randy W. DeYoung - Caesar Kleberg Wildlife Research Institute; Steve Demarais - Mississippi State University; Chad M. Dacus - Mississippi Department of Wildlife, Fisheries, and Parks

Sex determination of fetal white-tailed deer (*Odocoileus virginianus*) often is assigned based on external morphology. Previous studies indicate that fetal sex does not become distinct morphologically until 63-69 days of development. Until the advent of molecular techniques, there was no means to evaluate observer accuracy or determine if fetal sexing at <63 days is feasible. We collected 55 white-tailed deer fetuses at various stages of fetal development in Mississippi during spring of 2008. Fetal ages were estimated using Hamilton et al. (1985) and sexed by a panel of 50 naïve and 3 experienced observers. Naïve observers had at least a B.S. in a natural resource science field, but little or no experience in sexing fetal deer based on morphology. We then conducted a blind test on a tissue biopsy of each fetal sample using sex-linked genetic markers from the SRY and ZFX chromosomal regions. Using responses from all observers, logistic regression indicated that morphological sexing was 80% accurate for fetuses aged >56 days, 90% accurate for fetuses aged ≥61 days, and >95% accurate for fetuses aged ≥65 days. However, a logistic regression model built from responses of only the experienced observers revealed ≥97% accuracy could be obtained at ≥55 days. Thus, prior experience in sex determination based on physical characteristics may influence accuracy. Confirmation of accurate sexing may allow the technique to be modified for morphological sexing of fetuses aged <63 days. Our results have implications for studies that rely upon fetal sexing, such as testing adaptive sex ratio theories.

* Student Presentation

NOTES:

Monday, 3:30

***Population characteristics of white-tailed deer in a bottomland hardwood forest of south-central Louisiana**

Justin W. Thayer, Michael J. Chamberlain - Louisiana State University; Scott R. Durham - Louisiana Department of Wildlife and Fisheries

White-tailed deer (*Odocoileus virginianus*) are an important economical and recreational resource in Louisiana. Understanding the population dynamics of deer is essential to their sound management, but information on basic population parameters often is lacking in Louisiana. Also, interest among private landowners throughout the state in Quality Deer Management (QDM) is increasing. Our objectives were to evaluate space use, dispersal, harvest rates, and survival for a deer herd managed under a QDM regime in Louisiana. We used drop-nets and dart projectors in West Baton Rouge Parish to capture 70 deer during 2007 and 2008. We radio-collared 37 male and 11 female deer; an additional 10 male and 7 female deer were ear-marked only. Collared deer were monitored using ground telemetry 3 times weekly. During the 2007-2008 hunting season, 9 of 21 collared deer were harvested (a 43% harvest rate). Preliminary analyses indicate mean 95% annual home ranges for males and females at 347 acres (n=6) and 65 acres (n=2), respectively. Mean 50% core areas for the same sample are 34 acres and 12 acres, respectively. Dispersal was assessed for 5 of 11 (45%) 1.5-year old males; preliminary results indicate smaller home ranges than anticipated or seen in similar studies elsewhere in the Southeast. Our findings suggest that private landowners who manage small (50-300 acres) tracks of property may be able to practice QDM at scales previously thought to be ineffective.

* Student Presentation

NOTES:

Monday, 3:50

***Relationship between movements and body characteristics of male white-tailed deer**

Aaron M. Foley, David G. Hewitt, Randy W. DeYoung - Caesar Kleberg Wildlife Research Institute; Mickey W. Hellickson - King Ranch; Ken L. Gee - Samuel Roberts Noble Foundation; Karl V. Miller - University of Georgia; Mitch A. Lockwood - Texas Parks and Wildlife Department

Understanding breeding strategies of male white-tailed deer (*Odocoileus virginianus*) is difficult to study directly because of dense vegetation. It is reasonable to predict that movement patterns may be influenced by the deer's age, antler size, and body condition. Our objective was to determine if buck movement patterns during the rut were correlated with age, antler size, and body condition.

Each autumn, at the King Ranch, ~30 males are captured via helicopter net-gunning and fitted with GPS radio-collars that collect locations every 15 minutes during the rut. Age, rump fat thickness, and antler size are recorded for each male captured.

We found no relationship (R^2 = 0.002) between 95% kernel home range sizes and age of males (n=41). Total distance moved overall was not related to rump fat (n=25), but may have been (R^2 = 0.63 and 0.75) for males 1.5 and 2.5 years old, respectively. We found no relationship (R^2 = 0.02) between total distance moved and home range size for males in all age classes (n=25), although this metric was higher for the 2.5-year old age class (R^2 = 0.45). There was no relationship (R^2 = 0.0001) between distance moved in December and home range sizes for all males (n=41).

The lack of strong relationships between several physical characteristics and movement patterns of bucks suggests large individual variation. Although we detected some correlations among age classes, the inaccuracy of the tooth wear aging method casts doubt on our ability to accurately assign individual bucks into proper age groups.

* Student Presentation

NOTES:

Monday, 4:10

***Unusual movements by adult female white-tailed deer**

Jeffrey J. Kolodzinski - University of Georgia; Larry V. Tannenbaum - U.S. Army Aberdeen Proving Ground, MD; Lisa I. Muller - University of Tennessee; Mark C. Conner - Chesapeake Farms; W. Mark Ford - USDA Forest Service Northern Research Station; Kent A. Adams - National Wild Turkey Federation; David A. Osborn, Karl V. Miller - University of Georgia

Although the movement ecology of white-tailed deer (*Odocoileus virginianus*) has been investigated extensively, GPS technology has enhanced our ability to describe new aspects of deer behavior. We used GPS collars and frequent sampling (≥24 locations/day) to document the movements of 15 adult female deer for 1 year at 2 study sites on the Delmarva Peninsula; both sites were characterized as having high-density herds and near equal sex ratios. We tracked 10 of these deer through the breeding season. Daily distance traveled by each deer fluctuated in an unpredictable, rhythmic pattern. Deer movements showed peaks and nadirs occurring 3–5 times every 2 weeks. Distances traveled during peaks were 2 to 3 times greater than distances traveled during nadirs. Movement rates among different deer were not related (R^2<0.01), indicating that environmental factors were not the sole cause of movement periodicity. Rather, we suggest that movement patterns may be directed by intrinsic and extrinsic factors. During the breeding season, 9 of 10 does made an excursion from their seasonal home range that lasted an average of 24 hours (SD=18.2 hr, range:8–68 hrs). Eight of the deer excursed between Nov. 7 and Dec. 9 ($\bar{x}$ =Nov. 22), which coincided with peak breeding activity on the study areas (Nov. 5–25). No other excursions were observed between Oct. 1, 2006, and Jan. 27, 2007. Our results suggest that female deer may travel outside of their home range during the breeding season to search for potential mates even when mature males are abundant.

* Student Presentation

NOTES:

Monday, 4:30

***Measuring fine-scale white-tailed deer movements and environmental influences using GPS collars**

Stephen L. Webb, Bronson K. Strickland - Mississippi State University; Kenneth L. Gee - Samuel Roberts Noble Foundation; Stephen Demarais - Mississippi State University; Randy W. DeYoung - Caesar Kleberg Wildlife Research Institute

Few studies have documented fine-scale temporal movements of ungulate species, including white-tailed deer (*Odocoileus virginianus*), despite the advent of global positioning system (GPS) collars. To overcome a void of fine-scale movement data in the literature, we collected deer locations every 15 minutes for 17 female and 15 male white-tailed deer in Oklahoma. Our objectives were to determine effects of reproductive phase, moon phase, and short-term weather patterns on fine-scale deer movements. We found females during spring and males during spring and winter moved longer distances at sunrise and sunset, whereas female movements during summer peaked near sunset. Mean daily movements of females were greater during February-May prior to summer and parturition (i.e., June-August), whereas males moved more during November, which corresponded with breeding. Moon phase had no effect on daily, nocturnal, and diurnal deer movements ($P \geq 0.683$). Movements of both males and females were correlated weakly with temperature, wind speed, pressure, and relative humidity. We found a general linear trend in 8 of 80 models between weather variables and movement. However, parameter estimates were low (≤32 yards/hour) and did not provide useful biological interpretation. Deviation of weather variables from normal patterns revealed female movements were 205% greater ($P=0.007$) when relative humidity was above normal (1,542±328 yards) compared to below normal (506±59 yards). We found deer primarily exhibited crepuscular movements and that weather and moon phase had little influence on movements. These data provide useful information on deer movement patterns at temporal scales not previously studied.

* Student Presentation

NOTES:

Monday, 4:50

***Characteristics that determine activity thresholds in white-tailed deer**

Dean W. Wiemers, Timothy E. Fulbright, Alfonso Ortega-Santos, Allen Rasmussen - Caesar Kleberg Wildlife Research Institute

White-tailed deer (*Odocoileus virginianus*) commonly are thought to reduce activity in response to high temperatures and wind speeds. Our objective was to determine upper thresholds of temperature and wind speed beyond which activity is reduced. We captured 8 male white-tailed deer with net guns and outfitted them with Lotek 3300L GPS collars. The GPS collars monitored neck movements and also recorded temperatures every 30 minutes from 20 March 2008 to 31 August 2008. Neck movements were monitored by a sensor that counts vertical and horizontal movements, thereby reflecting deer activity. We placed a weather station on the study site to record ambient temperature and wind speed and randomly placed 69 blackglobes to estimate operative temperature. Data were analyzed using analysis of variance with percent of time deer were active as the independent variable and ambient temperature, operative temperature, GPS collar temperature, and wind speed classes as dependent variables. Individual deer were replications in the analysis. Deer were nearly twice (P<0.001) more active at 77° Fahrenheit (°F) than at 86°F, based on GPS collar temperatures. White-tailed deer reduced (P=0.002) activity when operative temperatures exceeded 95° Fahrenheit. Levels of activity were similar among ambient temperatures (P=0.815) and wind speeds (P=0.980). White-tailed deer reduced activity in south Texas when collar temperatures exceeded the 86°F threshold; wind speed did not appear to influence their feeding and bedding behavior.

* Student Presentation

NOTES:

Tuesday, 8:10

***Using fractal analyses to characterize movement paths of white-tailed deer and response to spatial scale**

Stephen L. Webb, Samuel K. Riffell - Mississippi State University; Kenneth L. Gee - Samuel Roberts Noble Foundation; Stephen Demarais - Mississippi State University

It is difficult to effectively test hypotheses on how animals respond to their environment because methods to quantitatively describe animal movements at appropriate spatial scales are lacking. We used fractal dimension (*D*) as a measure of tortuosity because it would (1) help describe animal movement patterns, (2) be useful for testing hypotheses about the effects of sex, home range size, monthly rainfall, and reproductive phase on movement paths, and (3) detect changes in deer movement patterns relative to spatial scale. We captured and fitted 33 (18 females, 15 males) white-tailed deer (*Odocoileus virginianus*) with global positioning system (GPS) collars. Females moved more tortuously than males ($t_{1,31}$=4.51, P<0.001); females had higher *D* estimates (1.75±0.035) than males (1.549±0.025). Therefore, females and males may perceive landscape structure differently. We found home range size influenced how thoroughly female deer searched their home range (R^2=0.256, P=0.032), but this was not true for males (P=0.432). Rainfall predicted *D* for females (R^2=0.174, P=0.002), but did not for males (P=0.059). Fractal *D* differed ($F_{2,305}$=8.65, P<0.001) among pre-parturition (1.415±0.021), parturition (1.468±0.02), and post-parturition (1.384±0.011) for females, but not for males during or after the rut ($F_{1,115}$=0.25, P=0.621). Fractal analyses were useful to detect changes in movements relative to spatial scale, to identify appropriate scales within which to conduct habitat analyses, and to test biological and ecological hypotheses.

* Student Presentation

NOTES:

Tuesday, 8:30

***Impact of hunting pressure on adult male white-tailed deer behavior at Chesapeake Farms, Maryland**

Gabriel R. Karns, Richard A. Lancia, Christopher S. DePerno - North Carolina State University; Mark C. Conner - Chesapeake Farms

Hunting pressure can change white-tailed deer (*Odocoileus virginianus*) behavior; however, this phenomenon has not been studied extensively in adult males using GPS technology. We deployed GPS collars on 19 (10 in 2006, 9 in 2007) adult (≥ 2.5-years-old) male white-tailed deer to examine home range and core area size, movement, activity, vulnerability to harvest, and refuge use before, during, and after Maryland's 2-week firearms season. Adult male white-tailed deer reduced movement during the dawn and day hours and decreased activity during the day hours from the pre-hunt study period to the hunt and post-hunt study periods. Home range and core area size, vulnerability, and refuge use did not change significantly between study periods. Hunting pressure on Chesapeake Farms was not sufficient to induce a demonstrable change in behavior of adult male white-tailed deer or cause deer to leave normal home ranges on excursions to avoid hunting disturbance. On the contrary, more intense hunting pressure on surrounding properties caused deer to use Chesapeake Farms as a refuge during the 2-week firearms season. Because hunting season coincided with the post-breeding season and movement and activity were the only factors to significantly change during the hunting season, results suggest that behavioral changes in white-tailed deer more likely were attributed to effects of the post-breeding season than disturbance caused by hunting.

* Student Presentation

NOTES:

Tuesday, 8:50

***Behavioral responses of captive deer to physical and visual barriers designed to minimize deer-vehicle collisions**

Daniel W. Stull, David A. Osborn, William D. Gulsby - University of Georgia; David M. Jared - Georgia Department of Transportation; Gino J. D'Angelo, Shane B. Roberts - University of Georgia; George R. Gallagher - Berry College; Robert J. Warren, Karl V. Miller - University of Georgia

Collisions with white-tailed deer (*Odocoileus virginianus*) present a significant hazard to motorists. Dense deer populations, coupled with a growing human population and expansion of the nation's roadway system, have increased the risk of deer-vehicle collisions. Our previous research revealed that deer whistles and roadside reflectors did not alter roadside behavior of deer sufficiently to prevent deer-vehicle collisions. To assess which types of barriers might prevent deer from gaining access to the roadways, we evaluated the ability of captive deer to cross fences and other barriers and examined the effects of these barriers on their behavior. We tested 3 fence designs of various heights and a barrier constructed of rip-rap rock. All deer (n=12) crossed a 4-5'-tall woven wire fence. Nine (75%), 5 (42%), and 0 deer jumped a 6', a 7', and an 8' fence, respectively. When retrofitted with opaque coverings, 9 of 10 deer jumped the 4-5' fence, and 8 (80%) crossed a 6' fence. When the 4' fencing was retrofitted with a 2' opaque 45° outward-facing outrigger, 7 (70%) deer successfully crossed the barrier. When we replaced experienced deer with 6 naïve deer, none jumped this modified fence. The naïve deer trials revealed the implications of a deer's perception of various barriers to prevent crossings when deer are known to have the physical ability to jump the barrier. We also will test the efficacy of rip-rap barriers in inhibiting deer movement. Additionally, we will examine the efficacy of combined barriers (fences plus rip-rap) in altering deer approach and crossing behaviors.

* Student Presentation

NOTES:

Tuesday, 9:10

***Evaluation of the Pennsylvania sex-age-kill model for white-tailed deer**

Andrew S. Norton, Duane R. Diefenbach - Pennsylvania State University; Christopher S. Rosenberry, Bret D. Wallingford - Pennsylvania Game Commission

The Sex-Age-Kill (SAK) model, when all age classes of males are assumed to have the same harvest rate, cannot be used with Pennsylvania harvest data. Because harvest regulations for antlered males specify that antlers must have a minimum number of points before a buck legally can be harvested, harvest rates for yearling males differ from older age classes. We modified the SAK model by directly estimating male harvest rates from radio-telemetry field studies and then estimated precision of population estimates using a parametric bootstrap approach. We found that population estimates by wildlife management unit had coefficients of variation (sd/mean) of $\leq$0.20. We used computer simulation to evaluate robustness of this modified SAK model to violations of assumptions.

* Student Presentation

NOTES:

Tuesday, 9:30

***Utility of trail camera users to assess deer population sex and age structure**

Johnathan Slade - University of Central Missouri; Lonnie Hansen - Missouri Department of Conservation; Victoria Jackson, Chad King, Kurt Dean - University of Central Missouri

In 2004, the Missouri Department of Conservation (MDC) implemented an antler restriction that required bucks to have a minimum of 4 points on at least 1 side to be considered legal game. To evaluate the potential long-term effects of this regulation on antler development, knowledge of antler characteristics in the population is essential. Harvest data are biased and thus are not suitable for making this assessment. Information obtained from thousands of trail camera users might serve as a potential source for this information. Participants were recruited using the 2006 mail survey database of firearms deer hunters. Because their ability to interpret data collected from trail camera photos was not known, our first objective was to determine if participants accurately could identify sex and age classes of white-tailed deer (*Odocoileus virginianus*) from trail camera photos. Using an online survey, participants were asked to identify sex, age category, and number of points $\geq$1" on the side of the deer's rack with the most points. The percentage of correctly aged deer by participants varied: fawns - 47.3%; does - 82.6%; antlered deer - 65.3%. Participants then were asked to interpret photos taken by their trail cameras during the first week of November in the fall of 2008 and report their findings through a web-based reporting form. This method of collecting data potentially could provide valuable demographic information on deer and other wildlife species that might be recorded by trail cameras.

* Student Presentation

NOTES:

Tuesday, 10:20

***Changes in forest understory communities following white-tailed deer exclusion**

Kelley L. Flaherty, James T. Anderson - West Virginia University; James Crum - West Virginia Division of Natural Resources

Over-browsing by white-tailed deer (*Odocoileus virginianus*) potentially can lead to long-term changes in forest community composition by inhibiting regeneration and decreasing the quality of forest habitat for understory-dependent wildlife species. We analyzed an 18-year dataset collected by the West Virginia Division of Natural Resources on forest communities at sites throughout the state. Random sites were selected throughout West Virginia and 1/40th-acre treatment and control plots were established at each site. Treatment plots were bounded by an 8' woven wire fence. Within treatment and control plots, understory woody stems (>1.64' and <1" DBH) were counted in 9 sub-plots. We used blocked Multiple Response Permutation Procedures in program PC-Ord to determine if differences existed between fenced and control plots at 3-year intervals after fence construction. We used a repeated measures 2-way ANOVA to compare Shannon diversity values in control and treatment plots. We found no difference in understory community composition during the initial observation ($p=0.791$) and 3 years ($p=0.076$) following initiation for each site. Significant differences between treatment and control plots were observed 6 years ($p=0.024$) after plot establishment and continued through the 18 years ($p=0.006$) analyzed. Diversity values were greater in treatment plots ($p<0.001$), suggesting that changes in understory communities were not driven by the success of a single species. These results may provide a time-table for herd managers interested in recovery of understory species for forest regeneration and wildlife habitat.

* Student Presentation

NOTES:

Tuesday, 10:40

***Biodiversity of supplemental wildlife plantings and thinned and burned pine habitats in South Carolina**

Marguerite E. Porter, David C. Guynn, Jr., Joseph D. Lanham - Clemson University; Hugh R. Still, Jr. - South Carolina Department of Natural Resources; Greg K. Yarrow, J. Rickie Davis - Clemson University

Biodiversity conservation currently is an important focus for forest and wildlife management. Our objective was to compare invertebrate and vegetation diversity as indicators of biodiversity in food plots established for white-tailed deer (*Odocoileus virginianus*) and in naturally-occurring forage areas. Invertebrates were chosen as a bio-indicator given the overall contribution they make to the biodiversity in an ecosystem (Anderson *et al.* 2004), their ease of capture, and their sensitivity to changes in vegetative structure and quality (Hartley *et al.* 2007). We used 5 thinned and burned forested pine sites, 5 perennial cool-season food plots, and 5 warm-season food plots located in the northern Piedmont region of South Carolina on the Clemson University Experimental Forest. We sampled invertebrates and vegetation at each site in the spring and summer of 2007 and computed Shannon Diversity Index and Shannon Evenness measures to quantify diversity of both vegetation and invertebrates; data were analyzed using ANOVA. Pine sites had a higher percentage of bare ground than either type of food plot and a more even distribution of invertebrates. Pine sites also had a greater diversity of invertebrate Orders than did cool-season plots. Based on preliminary results, supplemental plantings for white-tailed deer, as implemented on the Clemson University Experimental Forest, may not contribute significantly to improved biodiversity.

* Student Presentation

NOTES:

Tuesday, 11:00

***Available deer forage following various silvicultural treatments in mature mixed hardwood forests**

Marcus A. Lashley, Craig A. Harper, Gary E. Bates - University of Tennessee

Forage for white-tailed deer (*Odocoileus virginianus*) typically is more abundant in old-fields and agricultural openings than forested sites. Past research has shown forest regeneration increases forage availability. Recent work showed timber stand improvement in pine forests can increase forage production sufficiently to rival that of food plots. Related data are not available for hardwood forests. In 2007, we measured forage availability in 4 mixed hardwood stands following implementation of 6 silvicultural treatments with controls and compared that to forage produced in 4 adjacent warm-season food plots (June through October). Each food plot contained separate plantings of soybeans (*Glycine max*), lablab (*Lablab purpureus*), and iron-and-clay cowpeas (*Vigna sinensis*); 3 separate varieties of soybeans (4.6, 5.6, and 7.0 maturity) were planted in 2008. Nutritional carrying capacity estimates (deer days/acre) in 2007 for retention cut with fire (30 days/acre) and shelterwood with fire (22 days/acre) were greater than retention cut with herbicide (5 days/acre), retention cut with herbicide and fire (1 day/acre), fire (8 days/acre), shelterwood (9 days/ acre), and control (6 days/acre). In 2008, estimates of biomass production for retention cut with fire (1075 lbs/ac) were greater than shelterwood with fire (640 lbs/ac), retention cut with herbicide (290 lbs/ac), retention cut with herbicide and fire (295 lbs/ac), fire (335 lbs/ac), shelterwood (300 lbs/ac), and control (140 lbs/ac). Food plots exceeded all forested treatments in biomass production in both years. Use of food plots, coupled with population reduction, can be an important management practice where deer exceed nutritional carrying capacity. We also encourage land managers to proactively manage hardwood forests to increase available nutrition and improve available cover.

* Student Presentation

NOTES:

Tuesday, 11:20

***Predation and white-tailed deer recruitment in southwestern Georgia**

M. Brent Howze, Robert J. Warren - University of Georgia; L. Mike Conner - Joseph W. Jones Ecological Research Center; Karl V. Miller - University of Georgia

The Joseph W. Jones Ecological Research Center is a 29,000-acre research center in southwestern Georgia. Density of white-tailed deer (*Odocoileus virginianus*) on this site has remained relatively constant (10-15 deer/mile^2) since the early 1990s. Spotlight counts and hunter observations indicated that the fall fawn:doe ratio has averaged about 0.5. To assess whether predation was causing low fawn recruitment, we designated 2 study blocks on the Center: 1 block (11,000 acres) was designated as a predator removal zone and was trapped intensively to remove coyotes (*Canis latrans*) and bobcats (*Lynx rufus*); no predator removal occurred on the control block (7,000 acres). Blocks were separated by 2.5 miles and contained similar habitats. We removed 23 coyotes and 3 bobcats between January and August 2008; most were removed during fawning (June and August). Remote camera surveys conducted in September 2008 revealed a fawn:doe ratio of 0.72 in the removal zone compared to 0.07 in the non-removal zone. We also radio-collared fawns across the entire property in 2007 (N=8) and 2008 (N=13) to determine cause-specific mortality. Three predation events occurred on radio-collared fawns in 2007 (1 coyote, 2 bobcat) and 3 in 2008 (2 coyote, 1 unknown). Coyote and bobcat scat samples collected during 2007 and 2008 currently are being analyzed to determine seasonal variations in diets. These data, as well as results from a second camera survey (scheduled for January 2009), will be presented.

* Student Presentation

NOTES:

Tuesday, 11:40

***Assessing effects of supplemental feeding on selective foraging in white-tailed deer using stable isotopes ($\delta^{13}C$)**

Ryan L. Darr, David G. Hewitt, Timothy E. Fulbright, Charles A. DeYoung - Caesar Kleberg Wildlife Research Institute; Don A. Draeger - Comanche Ranch; Kelley M. Stewart - University of Nevada Reno

Supplemental feeding satisfies a portion of white-tailed deer (*Odocoileus virginianus*) dietary needs and may lead to selective foraging on higher-quality vegetation species to meet remaining nutritional requirements. Disproportional use of high-quality plants can lead to their decline in the vegetation community and other undesired ecosystem effects. We assessed the effects of supplemental feeding on selective foraging by white-tailed deer in 2 200-acre high-fenced enclosures in South Texas. We collected bite count data in spring and summer 2007 using 10 hand-raised female deer across both study sites; 5 deer had access to a pelleted supplemental feed, 5 did not. Nutritional analyses of plants consumed during bite counts were used to define the digestible protein (DP) and metabolizable energy (ME) of each deer's seasonal diet. We used carbon stable-isotopes ($\delta^{13}C$) to determine the proportion of supplemental feed in the diet of each deer. Results indicate that deer with access to supplemental feed consumed diets of 11% to 62% feed across both seasons. DP and ME did not vary between supplemented and unsupplemented deer in any season ($P \geq 0.11$) except for DP in the spring, which was lower ($P < 0.01$) in unsupplemented diets. Additionally, DP and ME were not related to percent feed in deer diets ($P \geq 0.13$) except at 1 study site in the spring ($P = 0.01$), where DP decreased with increasing percent feed. Our preliminary results indicate that supplemental feeding does not increase selective foraging, as measured by diet quality, in white-tailed deer.

* Student Presentation

NOTES:

Tuesday, 1:40

Condensed tannins and deer forage quality in Mississippi

Phillip D. Jones, Brian Rude - Mississippi State University; James P. Muir - Texas AgriLife Research; Stephen Demarais, Bronson K. Strickland - Mississippi State University; Scott L. Edwards - Mississippi Department of Wildlife, Fisheries, and Parks

Condensed tannins (CT) have been shown to reduce forage protein digestibility, potentially confounding conventional estimates of diet quality. We collected springtime samples of 8 common deer forages of moderate to high importance from 22 sites across 3 soil resource regions of Mississippi. We freeze-dried samples and tested for CT content using a modified butanol/HCL assay. Three species (*Smilax rotundifolia*, *Chamaecrista fasciculata*, and *Rubus trivialis*) contained CT. We tested the effect of CT on digestibility using 21 samples from 2 species ranging from 0.11–5.59% CT and rumen fluid from 3 adult wild deer collected in August. We tested samples for crude protein (CP) content before and after digestion. Average *in vitro* dry matter disappearance was reduced 2.0% (SE=0.6; P=0.007; r^2=0.75) for each 1% increase in CT. *In vitro* protein digestibility was reduced 2.5% (SE=1.1, P=0.039; r^2=0.65) for each 1% increase in CT. Assuming that our methods reflect the effects of CT on *in vivo* digestibility, the maximum loss of available protein in our samples was 3.4% CP, and only 7 of 143 forage samples (5%) from 8 forage species would have decreased available crude protein by >1%. Therefore, it is unlikely that CT substantially affect springtime diet quality of deer in Mississippi.

NOTES:

Tuesday, 2:00

When check stations don't exist: a mail survey for biological data collection and hunter interaction

Christopher D. Kreh, Bradley W. Howard, Mike Carraway - North Carolina Wildlife Resources Commission

Use of traditional check stations is declining throughout North Carolina and most deer hunters now validate their harvest by telephone. This makes it difficult for biologists to collect data and interact with hunters. In 2005, we began a "Jawbone Mail Survey" with the goals of increasing biological data collection and encouraging hunter participation/interaction with the NC Wildlife Resources Commission. This program has been implemented in two districts (23 counties).

Solicitation letters were mailed to 8,958 avid deer hunters asking if they would agree to collect and return jawbones; 11.6% responded positively. We provided instructions on how to properly extract jawbones and included postage-paid envelopes for their return. Sex, county, kill date, number of antler points, and hunter name/address are recorded on the envelope. Over 3 seasons, we received 984 jawbones from 444 hunters (1.7% of the reported harvest). Cost per jawbone is approximately $5.39 for the mail survey versus $26.55 when operating a traditional check station. Sex and age data obtained via mail appear to be representative of the actual harvest.

Information about the age of each deer, along with an agency newsletter, is provided to all hunters who mailed a jawbone. The newsletter has been well received and has increased constituent contact noticeably. In contrast, participation at 5 traditional information meetings has been less than desired, with <15 hunters in attendance /meeting.

A mail collection system seems to be an economical way to obtain certain types of biological data. Results related to hunter interaction are more difficult to assess, but seem promising as well. This is an evolving project and is presented to help other managers achieve similar goals.

NOTES:

Tuesday, 2:20

Wounding rates of white-tailed deer with modern archery equipment

M. Andy Pedersen - Naval Explosive Ordnance Disposal Technology Division, Indian Head, MD; Seth Berry, Jeffery C. Bossart - Naval Support Facility Indian Head, Indian Head, MD

We determined wounding rates of white-tailed deer (*Odocoileus virginianus*) by bowhunters using modern (compound bow and crossbow) archery equipment over a span of 18 years. This study covers long-term bowhunter performance in a low-intensity hunting environment, data that is absent from the literature. We relied on daily reports submitted by bowhunters who participated in managed hunts at the Naval Support Facility Indian Head, at Indian Head, Maryland. Bowhunters were required to pass the International Bowhunter Education Program and an annual pre-season shooting proficiency test. During the 1989-2006 hunting seasons, 104 bowhunters failed to recover 162 of 908 deer hit by arrows or crossbow bolts, corresponding to an 18% wounding rate. There was no difference in deer recovery metrics between compound bow and crossbow users (χ^2_1=0.01; P=0.92). Bowhunters who harvested the most deer (>20 deer per hunter) on the Navy Base had a lower pooled wounding rate than bowhunters who killed fewer deer (χ^2_1=22.2; P<0.005). Based on our estimates, qualified bowhunters were able to recover 1 deer for every 1.4 shots using modern archery equipment. It is important for decision makers to have accurate information on bowhunter performance when considering bowhunting as a deer management tool in suburban and other non-traditional hunting areas. Our results agree with estimates of bowhunter wounding rates produced from several other recent studies and suggest that wounding rates generated from older studies now are obsolete.

NOTES:

Tuesday, 2:40

Teaching old dogs new tricks: engaging reluctant stakeholders in balancing property rights and hound-hunting

Sarah G. Lupis Kozlowski, Steve L. McMullin, James A. Parkhurst - Virginia Tech; David E. Steffen, Nelson W. Lafon - Virginia Department of Game and Inland Fisheries

Hunting with hounds is a time-honored tradition in every state in the nation. In an increasingly suburban and exurban landscape, tension between hound-hunters and private land owners results from the desire of property owners to control access to their lands, the tendency of hounds to stray onto lands where they may not be welcome, and the need for hound-hunters to retrieve their dogs from private property. Trespass conflicts and other hound-hunting issues have prompted wildlife agencies in several southeastern states to re-examine hound-hunting as it relates to fulfilling wildlife management objectives and providing recreation opportunities in today's world. In this paper, we compare and contrast case studies from 6 states: Alabama, Florida, Georgia, Louisiana, South Carolina, and Virginia. The Virginia Department of Game and Inland Fisheries initiated a multi-stakeholder, public-involvement process in 2007. Resolution of trespass-related conflicts was identified by all stakeholders as a high priority and a multi-stakeholder advisory committee generated recommendations to address conflicts between landowners and hound-hunters. In Virginia, the public-input process often was confounded by hound-hunters who were hesitant to acknowledge that issues exist and who were skeptical of both the process and the outcomes. We conclude by describing the types of issues related to hunting with hounds that are emerging on a national level and, given the ability of inclusive public-involvement processes to generate buy-in for outcomes, we offer guidelines on how to successfully engage polarized and occasionally reluctant stakeholders in addressing conflicts.

NOTES:

Tuesday, 3:30

Long-term trends in white-tailed deer reproductive rates from eastern south Texas

Mickey W. Hellickson - King Ranch

Annual and long-term trends in white-tailed deer (*Odocoileus virginianus*) reproductive rates are important considerations when establishing harvest quotas, especially for the female segment of the herd. We have monitored reproductive rates on the 825,000-acre King Ranch in eastern south Texas since 1999, annually collecting 70-300 females during late January-February. Annual fetus counts averaged 1.48 fetuses per female (*N*=1,582; range=1.06 to 1.63) and were correlated with January rainfall (*r*=0.516). Highest fetus counts occurred in 2.5- to 6.5-year-old females (1.5-1.6 fetuses/female); lowest counts were observed in yearling (1.0) and old (1.1) females. Mean date of conception was 18 December (range=27 Oct. thru 18 Jan.); 80% of conceptions occurred during December. Mean date of conception was earliest for old females (15 Dec.) and latest for yearling females (21 Dec.). Highest conception rates occurred in 2.5- to 6.5-year-old females (87-92%); lowest rates were displayed by old (8.5+ years old; 69%) and yearling (72%) females. On average, 14% of adult females were not pregnant, 24% carried singletons, 62% carried twins, and 0.7% carried triplets. None of 13 fawns collected was pregnant. Average annual conception rate varied (×=85%; range=66-93%) and was correlated with January rainfall (*r*=0.425). Conception rates of yearling females were correlated to body size (*r*=0.325), whereas conception rates of old females were correlated to kidney fat index (KFI; *r*=0.318). KFI was highest in 2.5-year-old females (54%) and lowest in female fawns (21%) and old females (28%). Average annual KFI varied (30-61%) and was correlated with rainfall during December (*r*=0.820). Yearling females had the highest ratio of male offspring (80%), followed by old females (64%).

NOTES:

Tuesday, 3:50

Use of GPS-enabled personal digital assistants to collect data on deer carcass removal from roadways

Bridget M. Donaldson - Virginia Transportation Research Council; Nelson W. Lafon - Virginia Department of Game and Inland Fisheries

Deer-vehicle collisions (DVCs) on U.S. roadways are a growing concern in terms of human safety, property damage, and injury costs. Although valuable DVC data can be obtained by documenting each instance and location of a deer carcass on the roadway, most transportation organizations do not record this information systematically. In 2006, accidents reported by police in Virginia represented <14% of the 45,000 DVCs estimated from insurance industry claims. This project entailed (1) testing a personal data assistant (PDA) enabled with a global positioning system (GPS) receiver as a means to collect and analyze data on animal carcasses removed from the roadway, and (2) examining how best to integrate this method of data collection into regular practice by the Virginia Department of Transportation (VDOT). VDOT maintenance personnel in Rockbridge County collected 8 months of spatially accurate data on removed carcasses using GPS-enabled PDAs. DVC estimates using this procedure were >9 times higher than those reported by police. Given these results, VDOT plans to fully integrate the collection of carcass removal data, using PDAs, into regular practice by VDOT personnel. Accurate carcass removal data may be useful as a means to monitor deer population trends and guide mitigation measures to attain desired safety, economic, and conservation benefits.

NOTES:

Tuesday, 4:10

Potential for synergy between white-tailed deer herbivory and invasive plant species in mature deciduous forests

William J. McShea - Smithsonian Institution; Chad Stewart - Indiana Department of Natural Resources; Norm Bourg - Smithsonian Institution

Reduction of deer populations often is undertaken to increase the diversity of native plants within public forests. However, due to the recent invasion of exotic plant species into eastern forests, better understanding is needed of the relationship between white-tailed deer (*Odocoileus virginianus*) herbivory and invasive plant species and their relative contributions to limiting native species. We initiated a controlled field experiment in 2005 at 3 high deer density sites in the mid-Atlantic upland deciduous forest (Conservation and Research Center, Front Royal, VA; Great Falls National Park, VA; and the Goldmine tract of the Chesapeake and Ohio Canal National Historical Park, MD). We conducted baseline vegetation surveys (all herbaceous and woody plants ≤10" in height) of 333 12'x12' randomly located plots. We used a 2x2 factorial design of deer exclusion (fenced) and invasive species removal (hand pulling) treatments. Invasive species were pulled twice each year during the growing season and fences were maintained year-round. Plots were resurveyed in 2007 for native species richness, diversity, and woody stem counts. All experimental treatments resulted in increased species richness and total numbers, but the greatest response arose from removal of invasive species, not removal of deer. This response was most impressive for herbaceous species and on sites where invasive species already were abundant in 2005. All sites will be resurveyed in 2009, with emphasis on examining woody species. Deer control, in the absence of invasive plant species control, likely will not result in significant changes in understory plant diversity.

NOTES:

Tuesday, 4:30

The effect of an antler point restriction on harvest of deer in Missouri

Lonnie P. Hansen - Missouri Department of Conservation

To better achieve desired deer population management objectives, the State of Missouri implemented an experimental antler point restriction (APR): antlered bucks must have a minimum of 4 points on at least 1 side to be harvested. I examined the effect of the APR on harvest from 2004 to 2007 by comparing the deer kill in 53 counties (29 experimental, 24 control). Data collected through mandatory checking provided an enumeration of the doe, button buck, and antlered buck harvest. Extended age of harvested deer was estimated from data collected at meat processors. The overall harvest declined (8% by fourth year of study), but no effect was detected on doe harvest under the APR in a more agricultural area where deer densities tended to be highest. In contrast, although the overall harvest was unaffected, the harvest of does increased by 13% under the APR in a more heavily forested, lower deer density area. Harvest of 1.5 year old bucks was 66% lower than expected under the APR. Although the harvest of bucks $\geq$2.5 years of age increased by 56% under the APR, only a 20% increase could be attributed to the APR regulation. The reduction of antlered buck harvest attributed to the APR was highest in 2004 (-35%) and lowest in 2007 (-18%). These results indicate that an APR in Missouri reduced the overall harvest of bucks, but increased the harvest of adult bucks. Impacts on doe and total harvests varied geographically. Causes of these effects and implications for deer management are discussed.

NOTES:

Tuesday, 4:50

Impact of coyotes on fawn survival in South Carolina

John C. Kilgo - USDA Forest Service Southern Research Station; H. Scott Ray - USDA Forest Service-Savannah River; Matthew J. Goode, Mark A. Vukovich - USDA Forest Service Southern Research Station; Charles Ruth - South Carolina Department of Natural Resources

A growing body of evidence suggests that predation on fawns by coyotes (*Canis latrans*), a relatively new predator to the Southeast, may be responsible for recent declines observed in some deer populations in the region. We assessed the potential impact of coyotes by monitoring the survival and causes of mortality of radio-collared fawns on the Savannah River Site in west-central South Carolina. During 2006-2008, we captured and monitored 60 fawns, primarily using vaginal implant transmitters in pregnant does. Because no difference in annual survival rate was evident, we pooled fawns among years. The Kaplan-Meier survival rate was 0.300±0.119. Forty-four (73%) fawns died prior to recruitment into the hunted population. Causes of death were abandonment (1), bobcat predation (6), coyote predation (28 confirmed, 7 probable), and unknown predators (2). Coyote predation accounted for 64-84% of all mortality, and 47-62% of all fawns monitored succumbed to coyote predation. Most (66%) deaths occurred within the first 3 weeks of life; 36% occurred within the first week. Probability of death declined with age and no deaths occurred after 8.2 weeks of age. During 2008, residual predator saliva from 22 carcasses was analyzed genetically to confirm predator species and individual identity. Among 15 coyote-killed fawns that provided sufficient coyote DNA for individual identification, 13 individual coyotes were identified, indicating that most fawns were killed by different coyotes. The extremely high level of mortality we documented, coupled with ongoing harvest mortality, is sufficient to explain the observed decline in the local deer population.

NOTES:

CONFERENCE TEAM

32nd ANNUAL SOUTHEAST DEER STUDY GROUP

Co-Chairmen

W. Matt Knox
Nelson Lafon
David Steffen

Virginia Department of Game & Inland Fisheries

Al Bourgeois
Jim Bowman
Allen Boynton
Bob Duncan
Mike Dye
Cale Godfrey
Galon Hall
Coren Jagnow
Jay Jeffreys
David Kocka
Dan Lovelace
Brian Moyer
Aaron Proctor
John Rohm
Jonathan Sleeman
Betsy Stinson

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Sara Guerry
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James A. Parkhurst
Jeff Waldon
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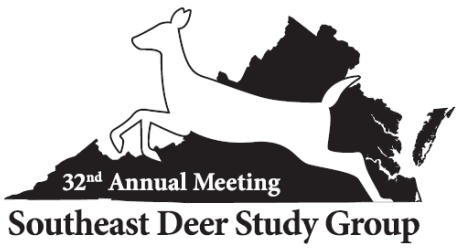

Table 1. Southeastern state deer harvest summaries for the 2007-2008 or most recent available season.

State	Land Area (sq. mi)	Deer Habitat		Percent Forested	% Land Area Public Hunting	Harvest		
		(sq. mile)	(% Total)			Male	Female	Total
AL	51,628	48,014	93	71	5	143,598	198,302	341,900
AR	52,609	44,718	85	53	12	107,322	59,827	169,853[10]
DE	1,954	714	36	15	8	6,069	7,571	13,689
FL	51,628	29,280	50	45	16			
GA	57,800	37,181	64	64	6	143,092	207,623	350,715
KY	40,395	39,654	97	59	9	73,586	73,881	147,467
LA	41,406	26,562	64	52	4	108,648	92,552	201,200
MD	9,837	8,766	89	46	4	42,614	47,740	90,354
MO	69,561	21,396	31	31	4	161,996	138,919	300,915
MS	47,296	31,250	66	66	6	144,118	141,012	285,130
NC	48,794	35,312	72	58	6	145,813	119,415	265,228
OK	69,919	37,425	54	19	2	58,059	37,832	95,891
SC	30,207	21,920	73	63	7.5	124,522	114,671	239,193
TN	42,246	25,770	61	49	9	86,727	72,146	158,873
TX	261,914	152,730	58	40	<2	288,227	224,625	512,852
VA	39,683	35,957	91	61	8	132,665	110,127	242,792
WV	24,064	22,889	95	79	9	93,168	52,769	145,937
Avg. or Total	940,941	619,538	69.4	51.2	6	1,860,225	1,699,013	3,561,989

Table 1. Southeastern state deer harvest summaries for the 2007-2008 or most recent available season. (continued)

State	Harvest/sq. mi. Deer Habitat	Method of Data Collection[1]	Estimated Pre-season Population	Length of Season (Days)[2]			Method of Setting Seasons[3]	% Land Area Open to Dog Hunting
				Archery	Black Powder	Firearms		
AL	7.1	A,B,C,I	1,750,000	111 (C)	22 (A,B,C)	76 (A,C)	A,B	70
AR	3.8	A,C	750,000	151 (C)	12 (C)	51 (C)	A,B	70
DE	19.2	A	48,000	131 (C)	14 (A,B)	35 (A,B)	A,B,C	0
FL		B		30	9	72	A,B	20
GA	8.4	A,C,D,E	1,021,000	115-146 (A,B,C)	80-95 (A,C)	73-88 (C)	A,B	70
KY	3.7	D,F,G	1,034,700	143 (C)	11 (A,B)	10-16 (C)	A,B,C	0
LA	7.6	A,B,C	750,000	123(C)	14(A,B)	65	A,B,C	80
MD	10.3	B,C,D,F,G	228,000	87 (C)	3+9 (A), 13 (B)	13 (A), 2 (B), + 1 Jr. day	A,B,C	0
MO	14.1	B,C,D,F,G	1,300,000	98	10	25	A,B	0
MS	9.0	A,B,C	1,750,000	52 (A)	14 (A),10 (B)	48	A,B,C	90
NC	7.5	A,B,C,D,F,G	1,25,000	24-54	6	18-69	A,B,C	50
OK	2.56	A,C, E	500,000	107	9	16	A,B	0
SC	11.2	A,B,C	725,000	16 (A)	10 (A)	70-140	C	60
TN	6.2	A,D	700,000	52	14	39	A,B,C	0
TX	3.4	B,C	3.4 million [9]	30	9	81-94	A,B	0
VA	6.8	A,B,C,D,F	~950,000	36-66	12-31	13-43	A,B	55
WV	6.4	A	697,000	68 (C)	6 (C)	22 (C)	A,B,C	0
Avg. or Total	8.0		12..3 – 13.0 million					56.5

Table 1. Southeastern state deer harvest summaries for the 2007-2008 or most recent available season. (continued)

State	No. of Hunters[4]	5-Year Trend	Hunting License Fees (Full Season)		Tagging System		
			Resident	Non-Resident	Physical Tag? License Tag? None?	Mandatory? Volunteer? None?	Bonus Tags Available?
AL	206,200	Stable	$24	$275	License Tag	Mandatory	N/A
AR	300,000	Stable	$10.50 – 25	$100 – 300	License Tag	Mandatory	Female/Mgt buck
DE	19,681	Stable	$25	$130	Physical Tag	Mandatory	2 Antlered, Unlimited Antlerless
FL	150,000	Stable	$12	$151	Some WMA's	Mandatory	No
GA	291,911	Down	$194,417	$48,604	License Tag	Mandatory	WMA'S
KY	255,000*	Down	$50	$190	License tag/ Hunter Log	Mandatory	Yes
LA	161,600	Stable	$29-50	$300-352	Physical Tag	Mandatory	None
MD	67,000	Down	$36.50	$130	Physical Tag	Mandatory	Antlered only
MO	475,000	Stable	$17	$175	License Tag	Mandatory	Antlerless only
MS	146,700	Down	$18.85-33.85	$303.85-382.70	None	None	Antlerless, DMAP & FMAP
NC	250,000	Down	$25	$120	License Tag	Mandatory	Antlerless Only
OK	370,038	Stable	$20	$201	Carcass Tag	Mandatory	DMAP
SC	145,236	Stable	$25	$225	None	None	Yes
TN	200,000	Down	$56	$251	Physical	Mandatory	Quota permits
TX	578,864	Stable	$23	$300	License Tag	None	MLDP permits
VA	~250,000	Down	$37-72	$152-212	License Tag	Mandatory	Unlimited on private lands, antlerless only
WV	230,000*	Down	$43	$209	Physical Tag	Mandatory	Yes
Total	4,097,230						

Table 1. Southeastern state deer harvest summaries for the 2007-2008 or most recent available season. (continued)

State	Mandatory Hunter Ed.	Mandatory Orange	Handguns Permitted	Crossbows Permitted	Drugged Arrows Permitted	# Fatal Hunting Accidents		Highway Kill[5]
						All	Deer	
AL	Yes	Yes	Yes	Yes	No	2	1	25,000 (B)
AR	Yes	Yes	Yes	Yes	No	8	4	18,498 (C)
DE	Yes	Yes	Yes	DDAP& SDDAPfarms, Handicap, Gun	No	0	0	3,553 (B)
FL	Yes	Yes	Yes	Yes	No	0	0	Unknown
GA	Yes	Yes	Yes	Yes	No	5	?	50,000
KY	Yes	Yes	Yes	Season & handicap	No	8	5	2,915 (A)
LA	Yes	Yes	Yes	Yes	No	0	0	9,700 (C)
MD	Yes	Yes	Yes	Handicap, 4 wks; >65; Entire Archery Season in Urban	No	1	1	11,553(A)
MO	Yes	Yes	Yes	Yes, Firearms	No	1	1	7,454 (A)
MS	Yes	Yes	Yes	Yes, Firearms, Primitive Weapons	No	3	3	12,146 (B)
NC	Yes	Yes	Yes	Handicap	No	8	6	19,277 (B)
OK	Yes	Yes	Yes	Handicap	No	1	0	Unknown
SC	Yes	WMA's only	Yes	Yes	Yes; No WMAS	2	2	1,560 (A)
TN	Yes	Yes	Yes	Yes	No	4	4	20,000 (C)
TX	Yes	WMAs only	Yes	Yes	No	2	1	Unknown
VA	Yes	Yes	Yes	Yes	No	0	0	44,000 (B)
WV	Yes	Yes	Yes	Yes (Disabled)	No	5	3	19,222 (A)
Total						50	31	

Table 1. Southeastern state deer harvest summaries for the 2007-2008 or most recent available season. (continued)

State	Limits [6]			Antler Restrictions [7]	% Hunting Success			Avg. Leasing Fees/Acre
	Season	Antlerless	Antlered		Archery	Muzzleloader	Firearms	
AL	3/None[6]	2 per day	3	B,C (1 County, 6 WMA's)	~25	~25	~55	$5-16
AR	4	2-4	2	A,C	?	?	?	$5.50
DE	None	4+	2	One buck must have a spread ≥15"	?	?	?	?
FL	2/day [6]	1 or 2/day[6]	2/day [6]	C	23	20	57	$2-4
GA	12	10	2	A (One buck must be 4-points on 1 side)	36	26	109	$5-15
KY		varies	1	C (9 WMAs)	----------	35% Combined	----------	$5-8
LA	6	3	3	Yes (C)	30	29	54	$5-30
MD		Regional	Regional	No	35	30 (C)	49	$5-35
MO	Varies	Varies	3; 1 with firearm	Yes, 29 counties	15	-	39	$10
MS	8	3+2 Archery	3	C	48	57	70	?
NC	6	6	2/4 [6]	NA	?	?	?	$2-6
OK	Gun	2	1	No	15	23	33	$2-5
SC	15+	10+	5+	C (8 WMA's)	31	29	68	$8–10+
TN		Varies	3 statewide	None	----------	44% Combined	----------	$5-10
TX	5	Up to 5	Up to 3	C	49	42	55	$7-15
VA	6 (east) 5 (west)	6	3 (east)& 2 (west)	On 2 WMA's + 1 County	~35	~39	~53	UNK
WV	11	Up to 9	Up to 3	5 WMA	34	15	55	$1-5
Avg.					40.3	36.2	72.4	

Table 1. Southeastern state deer harvest summaries for the 2007-2008 or most recent available season. (continued)

State	Private Lands Programs				Trailing wounded deer with dogs legal?	Supplemental feeding legal?	Baiting legal?
	Type[8]	Min. Acreage Requirements	Fee	No. of Cooperators			
AL	A	None	Yes	150	Yes	Yes	No
AR	A,C,D	200 ac	$25	A=264,D=3,000	Yes	Yes	Yes, Private
DE	DDAP SDDAP	None	None	200 130	No	Yes	Yes
FL	A	640	None	1,250	Yes	Yes	Yes
GA	None				Yes	Yes	No
KY	B	None	None	294	Yes	Yes (except March – July)	Yes
LA	A,D	40	Yes	A=450,D=416	Yes	Yes	Yes, Private
MD	None				Yes	Yes	Yes, Private
MO	B	5	None	150,000	Yes	Yes	No
MS	A,D	Variable	None	698	Yes	Yes	No
NC	A	Regional; 1,000/500	$50	127	Yes, dog areas	Yes	Yes
OK	A	1,000	$200-400	203	No	Yes	Yes
SC	A	None	$50	1,682 3.8 mil ac.	Yes	Yes	Yes 28 co. No 18 co.
TN					With officer approval	Yes	No
TX	A,B,C	None	None	5,030	Most of Texas	Yes	Yes
VA	DCAP DMAP	None	None	1,768; 932	Yes(east), No(west)	No (Sept 1 – first Sat in Jan)	No
WV	None				No	Yes except for CWD area	Yes except for CWD area

Table 1. Southeastern state deer harvest summaries for the 2007-2008 or most recent available season. (continued)

footnotes

[1] 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

[2] A–Early Season; B–Late Season; C–Full Season.

[3] A–Harvest & Biological; B–Departmental/Commission Regulatory; C–Legislative.

[4] Asterisk if estimate includes landowner exempted hunters.

[5] A–Actual number based on reports; B–Estimated road kill; C-State Farm estimate

[6] 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 the 7-day antlerless deer season.; MO - No daily or annual limit of antlerless deer but number that can be harvested in each county varies.; NC - Up to 2 bucks in those areas in the western season, northwestern season, and those areas of the central season where hunting with dogs is not allowed. Up to 4 bucks in those areas in the eastern season and those areas of the central season where hunting with dogs is allowed.

[7] A–Statewide Antler Restrictions; B–County Antler Restrictions; C–Region or Area Antler Restrictions.

[8] A–DMAP; B–Landowner tags; C–Antlered buck tags; D–Fee MAP.

[9] Texas population estimates should not be compared to estimates prior to 2005 due to changed methodology.

[10] Total harvest includes 2,704 deer of unknown sex.