QDMA's Whitetail Report 2009

An annual report on the status of white-tailed deer, the foundation of the hunting industry in North America.

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Introduction

As a member of the hunting media or a representative of the commercial hunting industry, you make your living off white-tailed deer. Your communication specialty may be turkey, elk or grouse hunting. As an industry employee, your livelihood may focus on waterfowl, quail or mule deer. You may not hunt whitetails or even live near them. But the hunting industry in which you work – including manufacturers, publications, Web sites, television programs, and nonprofits – depends on them. Far and away, more hunters pursue whitetails as their primary focus, more in fact than all other game species combined. Far and away more money is spent by deer hunters than by any other type. Yet, there is a perception in the hunting industry that because whitetails are abundant, there is no need to focus on whitetail conservation. Actually, the threats and issues that will determine the future of whitetail hunting in North America are largely issues of *quality* rather than quantity. The Quality Deer Management Association (QDMA) is uniquely positioned to understand these issues and their implications for the whitetail resource. The QDMA was founded to promote healthy, balanced, productive, sustainable deer herds and habitats – not to produce more deer. The QDMA has spent its 20-year history continually learning more about biologically sound deer management and passing that knowledge along to hunters and managers. Now, we want to share what we know about the threats, concerns, successes and challenges that will shape the whitetail's immediate and long-term future – and that of the entire hunting industry. This report is intended to be a useful resource for communicators, media members, industry leaders and hunters. It will be an annual report, so let us know how we can make the *Whitetail Report* even more relevant to your important role in this industry.

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The QDMA Mission:
QDMA is dedicated to promoting sustainable, high-quality, white-tailed deer populations, wildlife habitats and ethical hunting experiences through education, research, and management in partnership with hunters, landowners, natural resource professionals, and the public.

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Information & Assistance

Members of the media who have questions about the *Whitetail Report*, need additional information, or need sources for stories on whitetail biology or management, can contact QDMA's Education & Outreach staff at any time using the information below, or contact the National Office at (800) 209-3337. Additionally, if you are not already receiving QDMA's news releases by e-mail, contact Palmer Pope (ppope@qdma.com) to have your name added to the mailing list.

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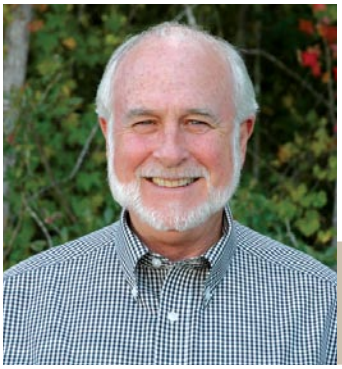

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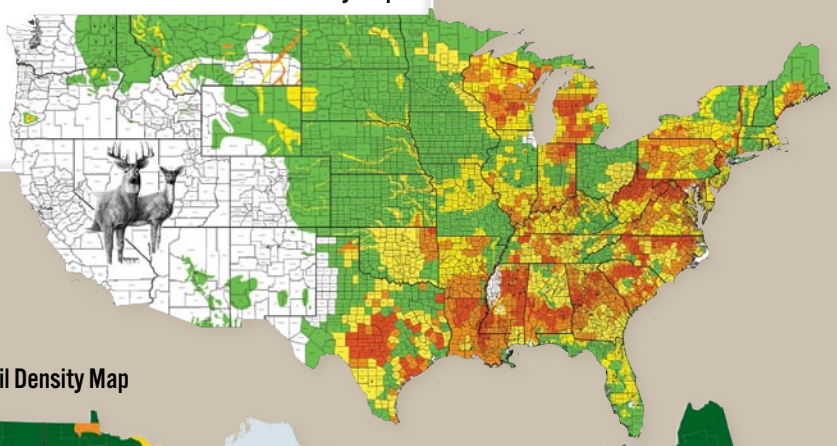
Part One:
Current Issues and Trends

Deer Harvest Trends

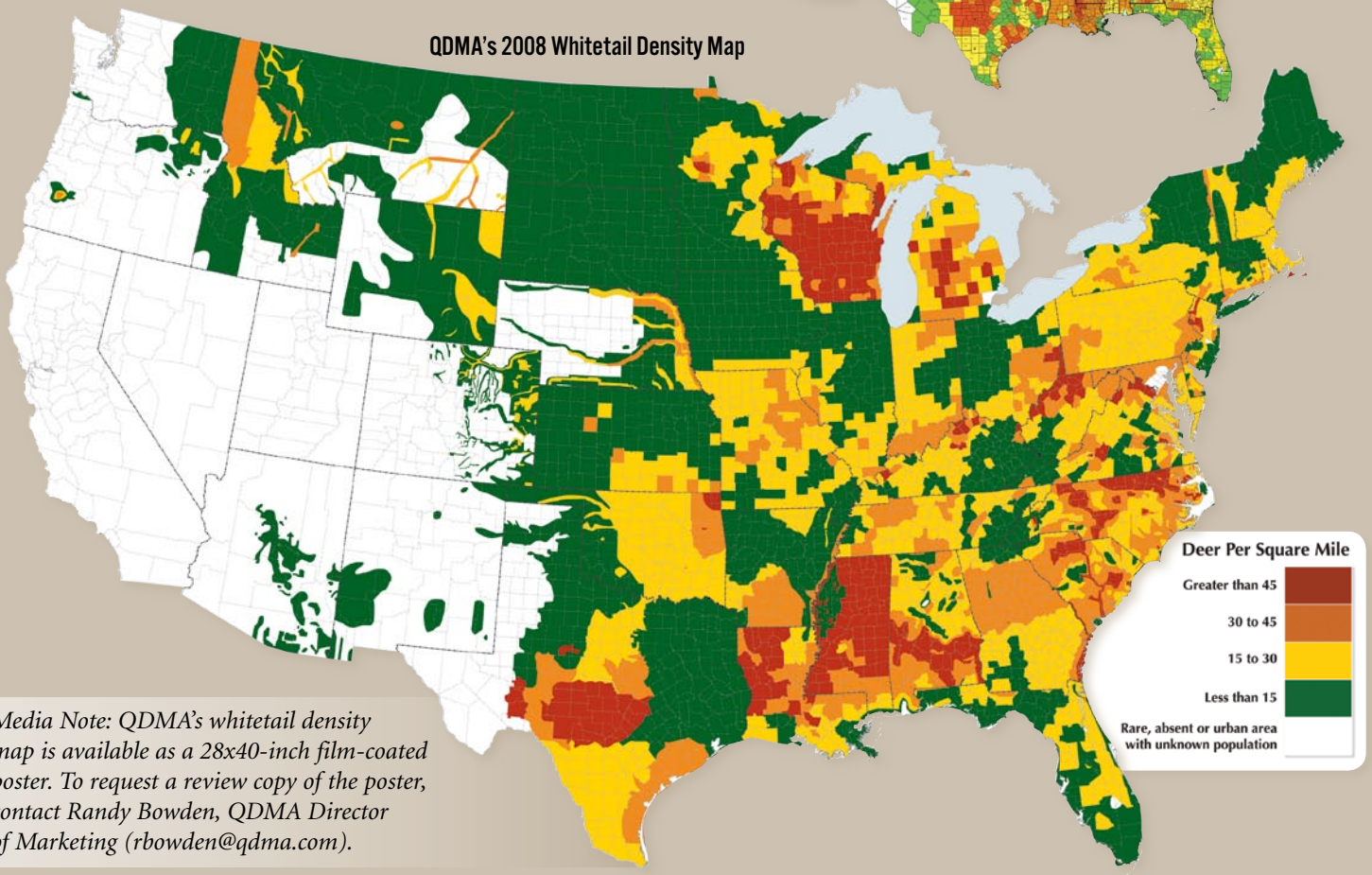
Interest in Quality Deer Management (QDM) has increased dramatically during the past decade, and many states have implemented regulations to improve the health and quality of their deer herds and habitats. Such regulations include buck harvest restrictions to reduce the harvest rate of yearlings and allow more bucks to reach older age classes, and increased antlerless opportunities designed to balance deer herds with the habitat.

In 2001 the Quality Deer Management Association (QDMA) produced a map showing the estimated deer density by county for the lower 48 states. The map also included deer herd and harvest information, the estimated number of deer-vehicle collisions, and QDM trend information. The map contained data provided by state wildlife agencies from 1994 to 1999. The map has been extremely popular as it is a valuable reference to compare relative deer densities, harvest data and other herd statistics among states. In 2008, QDMA updated the map with information obtained from state wildlife agencies. The new map contains information from 2001 to 2005, and noticeable changes have occurred since the initial map was produced. While a few states didn't provide data and some didn't provide all of the requested information, the submitted information provides for meaningful comparisons among states and between the 2001 map and the present. Both maps are seen on this page.

QDMA's 1999 Whitetail Density Map



QDMA's 2008 Whitetail Density Map



Media Note: QDMA's whitetail density map is available as a 28x40-inch film-coated poster. To request a review copy of the poster, contact Randy Bowden, QDMA Director of Marketing (rbowden@qdma.com).

Yearling Buck Harvest Trends

A significant indication of the spread of the QDM philosophy, the percentage of yearlings (1½-year-olds) in the nationwide buck harvest declined from an average of 51 percent in 1999 to 45 percent in 2005. During this same period the percentage of 2½-year-olds increased from 28 to 32 percent and 3½-year-olds or older increased from 19 to 23 percent. Some states made tremendous advances such as Pennsylvania dropping from 80 to 52 percent yearling bucks. Wisconsin dropped from 68 to 51 percent and Mississippi dropped from 50 percent to a nationwide low of 12 percent yearlings. Arkansas followed a close second with 20 percent yearlings. Pennsylvania used to lead this undesirable category but is now around the national average with at least six other states harvesting a higher percentage of yearlings, including neighbors Maryland, New Jersey, New York and Ohio (data not provided by Delaware or West Virginia). Michigan, New Jersey and New York now tie for the national lead with 63 percent of bucks harvested being 1½ years old.

Two states regressed in this statistic with South Carolina and New Hampshire both harvesting a higher percentage of yearlings in 2005 than in 1999. South Carolina increased from 48 to 55 percent and New Hampshire from 46 to 51 percent yearlings. In fairness to South Carolina, it was ahead of the curve in 1999 and is still doing well today, especially considering that more than half of the state has a four-and-a-half-month season with no buck limit. Also, New Hampshire has already established a procedure to reduce their yearling harvest rate. In 2005 the New Hampshire Fish and Game Department published their 2006-2015 Big Game Management Plan and Objective 2-1 of that plan states, "Manage regional deer populations to ensure that yearling males don't exceed 50 percent of the adult male population." From 2004 to 2006 the percentage of yearling bucks had exceeded 50 percent of the buck harvest in one of the state's wildlife management units (WMU). Therefore, the Department organized an ad-hoc deer advisory committee to determine the preferred strategies for reducing the yearling harvest rate in that WMU, and they implemented the chosen strategy in 2007. This component of their deer management plan is arguably one of the most progressive QDM procedures implemented by any state agency, and since its implementation the percentage of yearlings in the buck harvest has dropped to 24 percent in that WMU and 45 percent statewide.

As the number of yearling bucks in the harvest has declined in recent years, hunters across the country have reported seeing and harvesting more bucks in older age classes.

Overall, Texas leads the nation in buck harvest by harvesting nearly 250,000 bucks and fortunately only 28 percent of them are yearlings. Michigan is second with nearly 220,000 bucks, but unfortunately 63 percent of them are yearlings. Alabama and Wisconsin are next with approximately 183,000 bucks. Only 51 percent of bucks harvested in Wisconsin are yearlings, and age-class data wasn't provided by Alabama. Given Alabama's unlimited buck harvest regulations and season length in 2005, it is likely the percentage of yearlings was quite high. However, in 2007 the state took action and restricted the buck bag limit to three per year (one of which must have at least four points on one antler) in an effort to reduce their yearling harvest rate.

Older Bucks in the Harvest

With respect to 2½-year-old bucks, Maryland doubled their percentage in the harvest from 23 percent in 1999 to 46 percent in 2005. Nebraska increased from 29 to 56 percent and Indiana increased from 25 to 35 percent. Pennsylvania only separates their buck harvest into yearlings and 2½ years and older, and the Keystone state improved from 20 to 48 percent bucks that were at least 2½ years old. In actual numbers, these percentages represent an increase from nearly 39,000 to 58,000 bucks.

With respect to bucks 3½ years old and older, Mississippi leads the nation with 60 percent of their buck harvest reaching this age category. This percentage has tripled in Mississippi since 1999. Texas is second with 49 percent, and Arkansas is third with 38 percent. Other notables include Rhode Island with 37 percent, North Carolina with 28 percent, and Wisconsin jumped to 20 percent (double their percentage in 1999).

Quotable QDMA:

"From 1999 to 2005, some states made tremendous advances, such as Pennsylvania dropping from 80 to 52 percent yearling bucks in the buck harvest."

"Overall, Texas leads the nation in buck harvest by harvesting nearly 250,000 bucks and fortunately only 28 percent of them are yearlings."

"With respect to bucks 3.5 years old and older, Mississippi leads the nation with 60 percent of their buck harvest reaching this age category."

Antlerless Harvest Trends

With respect to antlerless harvest, 1999 was a landmark year since it marked the first time hunters in the United States harvested more antlerless deer than adult bucks. In 1999 hunters harvested approximately 6.2 million whitetails, with bucks accounting for slightly less than half. In 2005 hunters harvested approximately the same number of deer but bucks accounted for only 44 percent of the total. From 1999 to 2005, buck harvest as a percentage of total harvest declined while the antlerless harvest increased by about 10 percent.

Antlerless deer harvests are more difficult to compare across states and years as some states are aggressively reducing populations while others are seeking to stabilize herds. From 1999 to 2005, one of the most notable statistics was the increase in antlerless harvest in the Midwest. Illinois, Indiana, Iowa, Kentucky, Ohio and Missouri increased their antlerless harvests by an average of 78 percent from nearly 400,000 to over 710,000. Illinois and Iowa lead this list with 153 and 114 percent antlerless harvest increases, respectively. Overall Wisconsin leads the nation in this category by harvesting approximately 274,000 antlerless deer. Alabama is second with about 256,000 and Pennsylvania is third with 234,000. Pennsylvania's antlerless harvest is 27 percent higher than in 1999 but 38 percent lower than in 2003 when the state was aggressively reducing the deer herd.

One final comparison is to view antlerless harvest as a percentage of each state's total deer harvest. In 2005, about two thirds (65 percent) of the states shot as many or more antlerless deer than bucks, while one third (35 percent) shot more bucks. Delaware topped the list with antlerless deer comprising 70 percent of their harvest. Georgia, Iowa, New Jersey, Pennsylvania and Tennessee ranged from 66 to 69 percent, and Illinois, Maryland, Missouri, Ohio and Wisconsin ranged from 60 to 65 percent antlerless deer. States such as Maine, New Hampshire and Vermont shoot fewer than 50 percent antlerless deer. This is not surprising in northern New England where lower deer densities combined with severe winter weather allow for successful deer management programs with reduced antlerless harvests. However, states with productive deer herds like Michigan, Nebraska and North Carolina should likely have harvests comprising more than 50 percent antlerless deer rather than the 40 to 47 percent they averaged in 2005.

A decade ago Quality Deer Management (QDM) was still in its infancy, but its positive impacts on deer herds and habitats were becoming evident. Today, the QDM philosophy is not only growing in acceptance among hunters, but also shaping the future of deer hunting and management throughout North America. State wildlife agencies are urging sportsmen to play their role in balancing deer populations by harvesting female deer, and hunters are increasingly answering the call. Many states also are responding to the increasing support by hunters for more restrictive buck harvest guidelines. Still more hunters are voluntarily restricting buck harvests on their properties beyond what is required by law. In our ever-changing world at least one thing is clear; today's hunters are far more knowledgeable about whitetails, their role in management, and their preference for QDM. Aldo Leopold would be very proud.

QDMA's Recommendations

The percentage of bucks in the harvest has declined in most states during the past decade. This is a positive trend for the health of deer herds and habitat and for the future of hunting. The QDMA recommends deer herds are maintained in balance with their habitat, with balanced adult sex ratios and age structures. This situation is obtained by harvesting the biologically appropriate number of antlerless deer and by protecting young bucks. **For most states, adult bucks (1½ years and older) should constitute less than half of the total deer harvest, and yearlings should constitute less than half of the adult buck harvest.**

QDMA in Action

The QDMA works with private, state and federal deer managers to create season frameworks to allow for an appropriate antlerless deer harvest while simultaneously protecting the majority of yearling bucks. The QDMA has engaged on state and federal management proposals, and routinely provides educational opportunities for sportsmen and women on determining the correct number of antlerless deer to harvest and preferred strategies for protecting yearling bucks.

Quotable QDMA:

"1999 was a landmark year since it marked the first time hunters in the United States harvested more antlerless deer than adult bucks."

Photo by Joe Lacefield (http://joelacefield.com/)

"States such as Maine, New Hampshire and Vermont shoot fewer than 50 percent antlerless deer. This is not surprising in northern New England where lower deer densities, combined with severe winter weather, allow for successful deer management programs with reduced antlerless harvests."

	Estimated Deer Harvest					
	Antlered Bucks 1.5 Years & Older			Antlerless Deer		
State	2001	2003	2005	2001	2003	2005
Alabama	181,280	217,360	183,040	229,420	317,640	257,960
Arizona	3,659	4,324	4,647	*	*	*
Arkansas	*	65,607	72,486	*	42,540	58,971
Colorado	*	*	*	*	*	*
Connecticut	5,936	4,531	6,082	6,013	6,783	7,446
Delaware	*	*	4,269	*	*	9,768
Florida	78,653	78,841	*	29,744	39,110	0
Georgia	137,746	119,270	98,455	308,254	364,630	214,276
Idaho	*	*	*	*	*	*
Illinois	68,224	70,618	81,774	82,457	92,678	121,734
Indiana	48,357	49,533	52,488	54,806	57,453	73,038
Iowa	61,867	69,600	69,260	78,621	124,912	142,191
Kansas	*	*	*	*	*	*
Kentucky	47,697	54,188	48,690	55,640	62,352	63,722
Louisiana	118,832	111,350	108,784	93,368	111,350	100,416
Maine	16,798	16,185	15,261	10,971	14,128	12,887
Maryland	41,080	37,704	32,837	42,707	49,519	61,215
Massachusetts	5,130	5,667	5,669	4,780	6,369	6,363
Michigan	235,000	254,000	218,000	223,000	241,000	196,000
Minnesota	106,000	120,000	106,000	111,000	170,000	149,000
Mississippi	145,117	118,938	144,118	142,423	127,912	141,012
Missouri	116,293	109,597	103,973	147,681	181,034	183,563
Montana	*	*	*	*	*	*
Nebraska	26,930	24,482	29,876	22,000	19,900	19,800
New Hampshire	5,981	5,828	6,127	3,162	3,664	4,468
New Jersey	20,734	23,307	20,508	49,236	46,149	39,145
New Mexico	*	*	*	*	*	*
New York	127,084	107,533	89,015	154,786	145,555	91,199
North Carolina	109,399	117,808	139,486	88,960	89,441	118,272
North Dakota	*	*	*	*	*	*
Ohio	73,241	83,955	83,161	89,392	112,129	126,352
Oklahoma	54,045	54,831	57,756	47,590	45,781	43,355
Oregon	*	*	1,013	*	*	*
Pennsylvania	203,000	142,000	121,000	283,000	323,000	234,000
Rhode Island	463	960	1,133	443	756	1,133
South Carolina	141,000	123,000	112,000	167,000	150,000	132,000
South Dakota	26,721	26,502	31,464	22,037	31,520	38,320
Tennessee	48,877	45,631	38,687	69,070	71,741	81,784
Texas	219,434	242,937	247,026	175,726	189,917	217,352
Utah	*	*	*	*	*	*
Vermont	9,439	9,194	4,956	5,626	5,334	3,590
Virginia	110,659	116,629	101,041	101,874	117,243	114,041
Washington	*	*	*	*	*	*
West Virginia	*	*	*	69,079	89,065	47,447
Wisconsin	183,000	193,000	183,000	262,000	251,000	274,000
Wyoming	6,231	6,851	7,429	3,407	3,477	4,904

*Information not available

	Percentage Buck Harvest by Age Class								
	1.5 years old			2.5 years old			3.5+ years old		
State	2001	2003	2005	2001	2003	2005	2001	2003	2005
Alabama	*	*	*	*	*	*	*	*	*
Arizona	*	*	*	*	*	*	*	*	*
Arkansas	18	19	20	46	41	42	36	40	38
Colorado	*	*	*	*	*	*	*	*	*
Connecticut	36	41	39	64	59	61			
Delaware	*	*	*	*	*	*	*	*	*
Florida	*	*	*	*	*	*	*	*	*
Georgia	40	35	36	24	23	23	15	20	25
Idaho	*	*	*	*	*	*	*	*	*
Illinois	45	41	*	36	37	*	18	22	*
Indiana	56	54	50	31	30	35	14	16	16
Iowa	*	*	*	*	*	*	*	*	*
Kansas	*	*	*	*	*	*	*	*	*
Kentucky	60	58	48	40	42	52	*	*	*
Louisiana	*	*	*	*	*	*	*	*	*
Maine	41	43	42	24	25	24	35	32	34
Maryland	60	60	54	29	40	46	11	*	*
Massachusetts	42	47	48	28	27	27	30	26	25
Michigan	62	66	63	24	21	23	14	13	14
Minnesota	*	*	*	*	*	*	*	*	*
Mississippi**	12	14	12	34	27	23	45	54	60
Missouri	*	44	52	*	40	33	*	16	15
Montana	*	*	*	*	*	*	*	*	*
Nebraska	48(‘02)	*	44	52(‘02)	*	56	*	*	*
New Hampshire	44	46	51	26	26	26	30	28	23
New Jersey	59	59	63	32	31	29	9	10	8
New Mexico	*	*	*	*	*	*	*	*	*
New York	62	61	63	26	26	25	12	13	12
North Carolina	47	40	39	38	39	34	14	20	28
North Dakota	*	*	*	*	*	*	*	*	*
Ohio	59	58	56	28	29	31	14	13	14
Oklahoma	46	42	37.6	32	31	35	22	27	27
Oregon	*	*	*	*	*	*	*	*	*
Pennsylvania	78	56	52	22	44	48	*	*	*
Rhode Island	39	37	35	28	24	29	33	40	37
South Carolina	55	55	55	20	20	20	15	15	15
South Dakota	43	51	51	*	*	*	*	*	*
Tennessee	59	54	49	32	34	39	9	13	12
Texas	26	33	28	29	22	23	48	45	49
Utah	*	*	*	*	*	*	*	*	*
Vermont	56	66	44	27	19	32	17	15	24
Virginia	45	41	43	36	38	35	18	21	22
Washington	*	*	*	*	*	*	*	*	*
West Virginia	*	*	*	*	*	*	*	*	*
Wisconsin	58	56	51	27	27	29	15	16	20
Wyoming	*	*	*	*	*	*	*	*	*

*Information not available **DMAP and WMA data only

Antler Restrictions

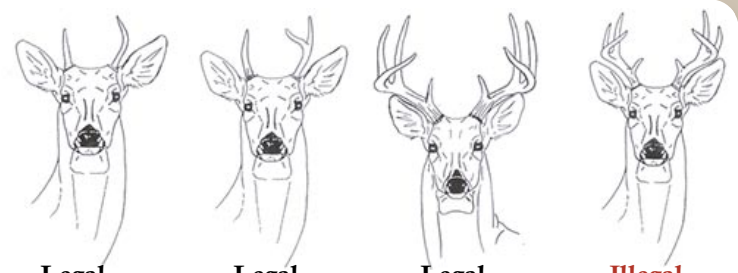
Antler restrictions are a hot topic among deer hunters. Whether you love or hate them, you can be sure your state wildlife agency has discussed them. In fact, 22 states had some form of antler restrictions implemented in 2008. Antler restrictions are not synonymous with Quality Deer Management. Rather, antler restrictions are a strategy to protect a specific age class (generally 1½ -year-old bucks, also called yearlings) or classes of bucks. Many antler restrictions have been used, including point, spread and beam length requirements as well as Boone & Crockett score. All restrictions have advantages and disadvantages. The key to implementing an effective strategy is to devise it from local data and then educate local sportsmen and women on the benefits.

In 2008, six states (Alabama, Delaware, Georgia, Michigan, Pennsylvania and Vermont) had statewide restrictions, at least for one buck, while 16 states used them in some wildlife management areas, units, regions and/or military bases. The most commonly-used restriction was the number of antler points. Fourteen states employed this technique, and depending on the state, the number varied from one to four points on a single antler.

Three states (Delaware, Kentucky and West Virginia) used an antler spread restriction. In West Virginia a buck was required to have an outside spread of 14 inches while Delaware and Kentucky both required 15 inches. Antler spread is a better predictor of whether a buck is 1½ or 2½ years or older, and is therefore a more biologically sound approach to protecting yearlings.

Four states (Georgia, South Carolina, Tennessee and Texas) used a combination of antler points and spread, and Mississippi used a combination of antler points, spread and beam length. These combination approaches allowed hunters to harvest bucks that met one of the two or three antler criteria. Combination approaches are generally more biologically sound, flexible, and preferred to single restriction strategies.

Modern-day deer management certainly differs from that of a decade or two ago. Today's hunters are more knowledgeable than ever and are demanding progressive management programs from their state agencies. This has proven to be very healthy for deer herds and the future of deer hunting.



Legal	Legal	Legal	Illegal
At least 1 unbranched antler	*At least 1 unbranched antler*	*Inside spread of 13" or greater*	*This buck meets neither criteria*

A 61-county area in Texas uses a combination of antler points and inside spread to regulate buck harvest (the actual guidelines are shown above). Combination approaches like this are generally more biologically sound, more flexible, and preferred to single-restriction strategies.

Quotable QDMA:
"Antler restrictions are not synonymous with Quality Deer Management. Rather, antler restrictions are a strategy to protect a specific age class or classes of bucks."

QDMA's Recommendations

The QDMA is encouraged by the increasing number of states implementing strategies to protect yearling bucks. In general, the QDMA prefers the voluntary passing of yearling bucks to mandatory antler regulations. However, we recognize that antler restrictions may be justified in some situations to achieve specific deer management objectives. In the long term, QDMA is optimistic that enough hunters will voluntarily pass young bucks that antler restrictions will become unnecessary and even cumbersome to more sophisticated management.

Regarding our position on specific antler restriction proposals, QDMA examines each on a case-by-case basis and applies a three-part test. First, is the restriction biologically sound? Second, is it supported by a majority of affected hunters and landowners? Finally, will it be objectively monitored to determine success or failure? Many restrictions fail one or more of these criteria. QDMA has supported some antler restrictions, opposed others, and taken a neutral stance on still others.

Regardless of strategy used to protect yearling bucks, QDMA recommends that state wildlife agencies conduct extensive education and outreach programs to inform hunters about the benefits of protecting yearling bucks and to garner their support for sound deer management in general.

"In the long term, QDMA is optimistic that enough hunters will voluntarily pass young bucks that antler restrictions will become unnecessary and even cumbersome to more sophisticated management."

	Does this state employ antler regulations of any kind?	What type of antler restriction is used?	Does the antler restriction apply statewide?	Does this state employ earn-a-buck* regulations?	Does this state offer a DMAP** program?
Alabama	Yes	antler point on 1 of 3 bucks	Yes	No	Yes
Arkansas					
Arizona	No			No	No
Colorado					
Connecticut	No			Yes	Yes
Delaware	Yes	antler spread on 2nd buck	Yes	No	Yes
Florida	Yes	antler spread	No	No	No
Georgia	Yes	antler point on 1 of 2 bucks	Yes	Yes	No
Iowa	No			No	No
Idaho	No			No	No
Illinois	Yes	antler point	No	Yes	No
Indiana	No			No	Yes
Kansas	No			No	No
Kentucky	Yes	antler spread	No	No	Yes
Louisiana	Yes	antler point	No	No	Yes
Massachusetts	No			No	No
Maryland	No			Yes	No
Maine	No			No	No
Michigan	Yes	antler point on 2nd buck	Yes	No	No
Minnesota	Yes	antler point	No	Yes	No
Missouri	Yes	antler point	No	Yes	No
Mississippi	Yes	combination	No	No	Yes
Montana					
North Carolina	No			No	Yes
North Dakota	No			No	No
Nebraska	No			No	No
New Hampshire	Yes	antler point	No	No	No
New Jersey	Yes	antler point	No	Yes	No
New Mexico					
New York	Yes	antler point	No	No	Yes
Ohio	No			No	No
Oklahoma	No			Yes	Yes
Oregon	Yes	antler point	no	No	No
Pennsylvania	Yes	antler point	Yes	No	Yes
Rhode Island	No			Yes	No
South Carolina	Yes	antler point/spread	No	No	Yes
South Dakota	No			No	No
Tennessee	Yes	antler point/spread	No	No	Yes
Texas	Yes	antler point/spread	No	No	Yes
Utah	No			No	No
Virginia	Yes	antler point	No	Yes	Yes
Vermont	Yes	antler point	Yes	No	No
Washington					
Wisconsin	No			Yes	No
West Virginia	Yes	antler spread	No	No	No

*Earn-a-buck rules require a hunter to earn a buck tag by first harvesting an antlerless deer.

**DMAP (Deer Management Assistance Program) allows hunters to acquire special permits to take additional antlerless deer.

NOTE: Information in this chart collected by QDMA in 2008.

Lead in Venison

Deer hunters provide venison through donation programs each year and make a substantial contribution to feeding the needy. Two widespread programs are the Farmers and Hunters Feeding the Hungry (FHFH) and Hunters Helping the Hungry (HHH), but there are many state-specific efforts such as Missouri's Share the Harvest program and the Michigan Sportsmen Against Hunger program.

Results from a study conducted by the Peregrine Fund in Boise, Idaho – an international nonprofit with a mission of conserving birds of prey in the wild – indicated there were 212 game meat donation programs in 46 states and four Canadian provinces during the 2007/2008 hunting season. That year, venison, a high-quality source of protein to those in need, provided approximately 25 million meals. The Peregrine Fund study cautioned that consumers of game meat harvested with lead shot or with standard lead rifle bullets are at risk of lead exposure, and concluded that meat donation programs could reduce the risk of lead exposure in the beneficiaries by accepting meat only from bowhunters or hunters who use non-lead ammunition.

Timeline of 2008 Events

In mid-March, 2008, a physician and hunter from Bismarck, North Dakota – who is also on the Board of Directors of the Peregrine Fund – collected 95 packages of ground venison that had been donated to food pantries. He X-rayed the packages and detected the presence of metal in 53 packages. The North Dakota Department of Health sent five samples containing metal fragments to an accredited laboratory in Iowa for testing. All five samples tested positive for lead.

In March, 2008, the North Dakota departments of Health, Agriculture, and Game and Fish considered the seriousness of lead poisoning, particularly for children and pregnant women, and took precautionary measures. It was recommended that food pantries halt their distribution of ground venison.

On April 10, 2008, the Minnesota Department of Agriculture announced that laboratory tests confirmed the presence of lead fragments in 76 of 299 samples of ground venison from food pantries. As a result, the food pantries were asked to destroy any remaining venison.

On June 4, 2008, agency representatives from the midwestern states of Minnesota, Wisconsin, North Dakota, South Dakota, Iowa, Michigan, and Missouri met to develop a consistent and coordinated approach to assist regulators, hunters, and processors answer questions and provide useful information about managing risks associated with lead fragments in hunter-harvested deer. Each of the states mentioned has a venison donation program for food pantries. Information generated at this meeting was to be used to enlighten hunters, processors, and consumers of ways to minimize exposure to lead in venison.

Venison donation programs play a key role in sound population management, because recommended doe harvest levels sometimes exceed what a hunter's family can consume.

Although no illnesses have been linked to consumption of lead fragments, both North Dakota and Minnesota launched studies to gather more

Quotable QDMA:

"In the CDC study of blood lead levels, hunters tested far below 10 parts per billion, which the CDC considers to be a level of concern in children."

information on the topic. The states of Iowa, Michigan, and Wisconsin continued their venison donation programs during the fall of 2008, but it has not been determined if Minnesota, South and North Dakota will participate.

The CDC Study

In May, 2008, the North Dakota Department of Health and the U.S. Centers for Disease Control and Prevention (CDC) conducted a study to measure the risk, if any, of eating wild game harvested with lead bullets. The study involved testing 738 North Dakotans who volunteered to have their blood tested for the presence of lead.

In a news release dated November 7, 2008, the National Shooting Sports Foundation (NSSF) – the trade association for the firearms, ammunition, hunting and shooting sports industry – reported there was no evidence that lead or "traditional" ammunition posed any risk to consumers of harvested game meat. This statement was in response to study results from the CDC released by the North Dakota Department of Health.

The CDC report indicated that the average lead level of the hunters tested was lower than among average Americans: The mean blood lead level in Americans is less than 3.0 parts per billion, and hunters in the study had a mean of 1.27. Hunters also tested far below 10 parts per billion, which the CDC considers to be a level of concern in children. Furthermore, the study revealed insignificant differences in lead levels between those who consumed wild game harvested with traditional ammunition and non-hunters in the non-random control group (1.27 versus 0.84). Hunters also tested below other variables examined in the study (see the chart on this page).

However, because consumers of wild game tested slightly higher than non-consumers, anti-hunting and anti-lead groups are claiming positive results. For example, on November 10, 2008, a Peregrine Fund press release was titled: "CDC Study Confirms Peregrine Fund Warning About Lead Bullets." The release stated: "A new study by the U.S. Centers for Disease Control showing that people who eat wild game shot with lead bullets appear to have higher levels of lead in their blood than people who don't confirms a warning first raised by The Peregrine Fund in May..."

Results from a 2008 CDC study of 738 North Dakota Residents

Mean blood lead levels (MBLL) shown highest to lowest

Note: For perspective, the CDC considers a BLL of 10.0 micrograms per deciliter or higher to be a concern in children.

Variable Examined	MBLL*
Less than high school education	1.95
Age 65-plus	1.77
High school graduate	1.57
All males	1.49
Home constructed pre-1950	1.39
Home renovation in last 12 months	1.37
Home constructed 1950 to 1977	1.31
Age 45-65	1.29
Consumes wild game	*1.27*
College grad or post-grad	1.10
Home constructed post-1978	1.00
All females	0.89
Age 2-5	0.88
No wild game consumed	0.84
Age 25-44	0.75
Age 6-24	0.60

*Mean blood lead level given in micrograms per deciliter, or parts per billion.
Source: Centers for Disease Control and Prevention

A November 14, 2008 news release from the U.S. Sportsmen's Alliance (USSA) revealed that the Humane Society of the United States (HSUS), a major opponent of hunting, issued a call for the lead ammunition ban as a result of the reports filed by the North Dakota Department of Health and the CDC. According to USSA Senior Vice President, Rick Story, "HSUS should stop hyperventilating and actually read the report, since it makes clear that the average level of lead in the people tested is actually lower than the level of the average American. That fact completely undermines its call for banning traditional ammo." Story also commented that, "It should come as no surprise that America's leading opponent of hunting, fishing and trapping has mischaracterized the findings of the CDC report. It (HSUS) will resort to any means necessary to deny the rights of sportsmen."

Facts hunters should know from the CDC study were published in the NSSF news release and include the following:

1. Consuming game harvested using traditional hunting ammunition does not pose a human health risk.

Quotable QDMA:
"The mean blood lead level in Americans is less than 3.0 parts per billion, and hunters in the study had a mean of 1.27. However, because consumers of wild game tested slightly higher than non-consumers, anti-hunting and anti-lead groups are claiming positive results."

2. Participants in the study had readings lower than the national average and well below the level the CDC considers to be of concern.

3. Children in the study had readings that were less than half the national average and far below the level the CDC considers to be of concern.

4. The study showed a statistically insignificant difference between participants who ate game harvested using traditional hunting ammunition and the non-hunters in the control group.

5. Hunters should continue to donate venison to food pantries.

QDMA's Recommendations

Venison donation programs are a substantial benefit to society by providing high-protein, low-fat venison to needy families. However, these programs also play a key role in sound deer population management, because hunters attempting to reduce deer densities where necessary often need to harvest more does than their families can consume. Considering that the CDC study found no evidence of health concerns related to consumption of venison harvested with lead ammunition, venison donation programs should be continued, and hunters and their families should continue to consume venison. QDMA recommends further study to confirm the CDC findings and to highlight methods for harvesting, field-dressing and processing deer that can reduce lead fragments in venison.

Youth Hunter Recruitment

It is a fact that hunters pay most of the costs associated with wildlife management across North America. This system has many shortfalls, but it is clear that hunters are critical to modern wildlife management. Unfortunately, we are losing hunters at an alarming rate. Only 5 percent of the U.S. population hunts, and the average hunter is 43 years old. We are currently losing more hunters to old age than we are gaining from our youth. Why aren't we recruiting more youth? A company from Harrisonburg, Virginia, may have some answers.

Responsive Management (RM) is a nationally recognized public opinion and attitude survey research firm specializing in natural resource and outdoor recreation issues. In 2003, RM completed a survey titled *Factors Related to Hunting and Fishing Participation Among the Nation's Youth*. Responsive Management surveyed youths 8 to 18 years old from across the country, and the following information highlights some of the survey's important findings.

Of the youths surveyed:

- 54 percent had shot a bow at some point in the past.
- 47 percent had shot a gun at some point in the past.
- 91 percent had a high or medium interest in wildlife.
- 56 percent agree that hunting for food is okay.
- 58 percent approve of legal hunting (33 percent disapprove of legal hunting).
- 24 percent had been hunting at some point, and 15 percent had hunted in the previous year.
- 44 percent expressed interest in going hunting.
    - Those who were very interested in going hunting were significantly more likely to have a family member who hunts.
    - Those who were very interested in going hunting were more likely to have been fishing in the previous year.
    - Those who were interested in going hunting were significantly more likely to live in a rural area or to have grown up in a rural area.
- Males were more likely than females to be very interested in going hunting.
- 88 percent think it is okay for girls to hunt and 91 percent think it is okay for boys to hunt.
- 50 percent think hunting is unsafe (40 percent think it is safe).
- 71 percent think hunting is "cool."
- Very few youth see or hear information at school that helps them learn more about hunting or increases their interest in hunting.
- 61 percent who hear about hunting at school say they hear good things about it (7 percent hear bad things about hunting).
- 47 percent did not know whether their teachers supported or opposed hunting
- Youths from a single-parent household were more likely to have hunted.

Of the surveyed youths who had hunted:

- 95 percent liked hunting.
- 69 percent would like to hunt more than they do.
- The single most common reason for hunting was to have fun (34 percent) and to be with friends or family (30 percent).

The report also stated youth participation in hunting is positively related to being male, to having a family member who hunts, to having also been fishing, and to living in a rural area or spending time in rural areas. Youth hunters typically had a mentor who had a positive influence on their interest and/or participation in hunting. The top reason given that would encourage youth to go hunting or hunt more was being asked by another person such as his/her father, another family member or a friend.

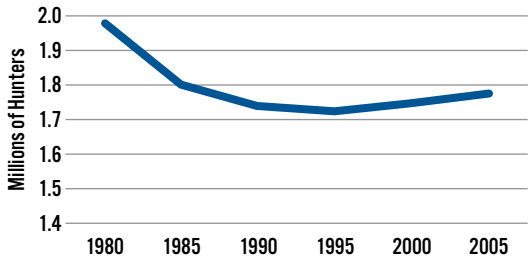
Quotable QDMA:

"Research shows the least restrictive states with respect to youth participation in hunting have higher average youth recruitment and retention rates."

In 2008, Pennsylvania's Jarrett Benoit, age 12, became the first youth to complete QDMA's 8-Step Mentored Hunting Program. Jarrett's mentor was his dad, Jim. The program focuses on basic woodsmanship skills and small-game hunting, with actual deer hunting as one of the final stages.

The report is full of statistics and percentages, but some of the key findings include:

- most youths think hunting is cool.
- many youths would like to hunt more than they do.
- few youths hear much about hunting at school.
- youths that hunt likely fished at an early age.



Source: U.S. Fish & Wildlife Service, 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation

These data indicate that participation by youth hunters declined from 1980 to 1995 but has been on the rise for the past decade. The numerous outreach efforts of many organizations, including the Families Afield legislation, could build on this momentum and make a significant impact on the future of hunting.

The above four bullets are a great starting point for anyone to make a positive impact on youth hunter recruitment. You can embrace the fact that hunting is "cool" to youths. Youths have the rest of their lives to do their part for wildlife management; let them have fun doing a "cool" activity in the early years. We all have a day or two each year we can forego our own hunting and take a youth to the woods. Being a mentor for merely one day can pay dividends to the youth and you. We all know a teacher or someone who works in a school system. Ask them to mention to the students that it is hunting season or to ask the students how many of them or their parents hunt. A single question may start a productive dialogue about hunting. Lastly, take a child fishing. We all could take a child (or a truck load of kids) to a trout stream or a farm pond full of bluegills. You don't have to own land to take a youth fishing, and you don't even have to have much money. A $10 spinning rod and $2 pack of night crawlers are all that are necessary.

QDMA's Recommendations

Mentoring is a rewarding experience and one that can pay big dividends to the future of hunting. QDMA recommends sportsmen and women mentor a youth or first-time hunter. The QDMA also recommends state wildlife agencies remove barriers restricting youth participation such as minimum ages to hunt and mandatory hunter education courses prior to "trying" hunting. Research shows the least restrictive states with respect to the previous variable have higher average youth recruitment and retention rates. Research also shows mentored youth are statistically the safest hunters as they're only involved in a fraction of hunting accidents.

QDMA in Action

To assist with this situation, the QDMA developed a Mentored Hunting Program. It is an innovative hunter education and recruitment program designed to increase the number of youth and first-time hunters by matching mentors with interested students. It teaches students the importance of hunting, provides them with a greater understanding of the role of hunting in sustainable wildlife management, and builds the foundation for them to become better stewards of our natural resources and better ambassadors for hunting. The QDMA also supported legislative efforts in 10 states in 2007-08 to remove barriers for youth and first-time hunters.

8 Steps of QDMA's Mentored Hunting Program

1. Exposes students to the program, provides background information on the QDMA and hunting, and allows the mentor and student to bond.
2. Develops basic woodsmanship skills while building a framework to become a successful and knowledgeable hunter.
3. Exposes students to formal sporting arm, archery and treestand safety training and hunter ethics and education.
4. Reinforces sporting arm and/or archery safety and develops shooting competence.
5. Involves small-game hunting because it enhances woodsmanship skills, reinforces sporting arm use and safety, lacks the pressure of a big game hunt, and is generally more exciting for beginning hunters.
6. Teaches deer biology, behavior, ecology, deer anatomy, shot placement and Quality Deer Management concepts.
7. Involves deer hunting while the mentor reinforces safety, shot selection, management concepts and hunter ethics.
8. Celebrates the hunt, recognizes the student as a "hunter" and serves as his/her rite of passage into the hunting community.

Quotable QDMA:

"You can embrace the fact that hunting is 'cool' to youths. Youths have the rest of their lives to do their part for wildlife management; let them have fun doing a 'cool' activity in the early years."

Chronic Wasting Disease

Prior to 2002, chronic wasting disease (CWD) was unfamiliar to most hunters from the East, Midwest or South. In fact, unless you were from Colorado, Wyoming or a handful of other western states, you probably hadn't heard of CWD or at least didn't know much about it. Today, the picture is much different. You would be hard pressed to find a deer or elk hunter anywhere in North America who hasn't heard of CWD. While there is much we don't know about the disease, scientists are steadily making new discoveries.

In 2002 CWD was confirmed in Wisconsin from three bucks killed near Mount Horeb in November 2001. This marked the first incidence of CWD east of the Mississippi River. This was a major discovery because the disease was now in a high-density deer population. Many western deer herds average less than 10 deer per square mile while Wisconsin has herds exceeding 45 deer per square mile. This was important because infected deer can pass the disease to other individuals, and high density herds, especially those in close proximity such as at feed sites, provide an avenue for high disease transmission rates. Scientists knew deer could pass the disease to other deer but were, and still largely remain, unsure of exactly how they do it.

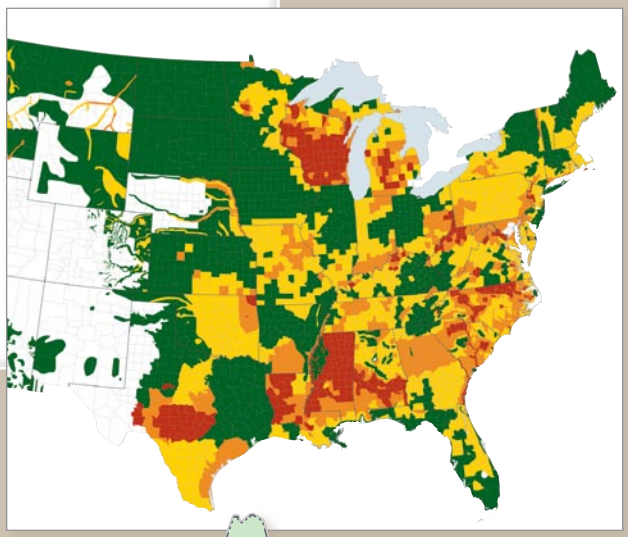
As of December 2008, CWD had been identified in captive and free-ranging herds in 15 states, two Canadian provinces and Korea (from an elk imported from Canada in 1997). CWD has been identified in white-tailed and mule deer, Rocky Mountain elk and moose. Black-tailed deer are also susceptible as they are a subspecies of mule deer. Much research has been conducted on CWD and much continues today, but we still don't know the origin of the CWD agent in cervids (deer, elk and moose) and likely never will.

Implications for Human Health

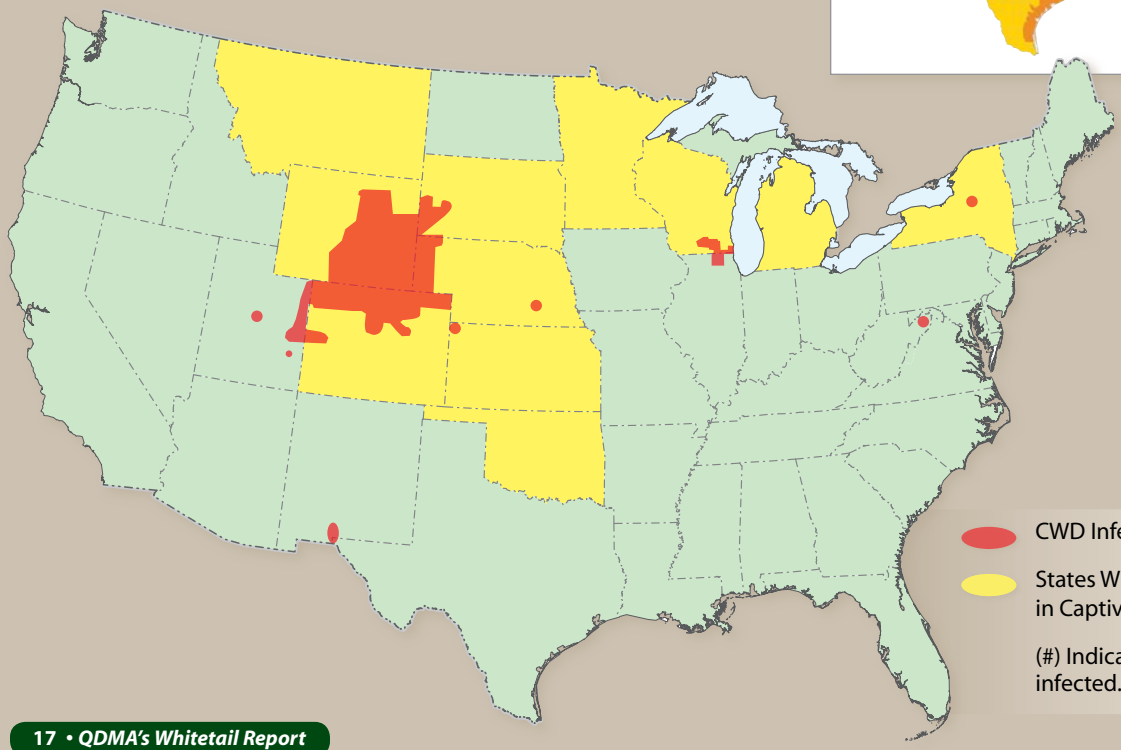
Fortunately, research suggests the disease won't cross the species barrier and infect humans. The World Health Organization and Centers for Disease Control and Prevention both state there is no evidence that humans can contract the disease from eating CWD-infected cervids. This

Quotable QDMA:

"CWD's clinical signs typically develop from one and a half to three years after exposure. Thus, infected deer generally appear healthy while they may be passing the disease to others."



Chronic Wasting Disease in North America



For years, CWD was present in the West, where herds average less than 10 deer per square mile. In 2002, when CWD appeared in the East in Wisconsin, it was now established in high-density herds exceeding 45 per square mile (see QDMA's deer density map, above). Potential transmission rates are higher where herds are denser.

CWD Infected Wild Cervid Populations

States Where CWD Has Been Found in Captive Cervid Populations

(#) Indicates total number of captive herds infected. Many have been eliminated.

statement is important as the infective prions (abnormal forms of cellular protein) causing CWD accumulate in an animal's brain, eyes, spinal column, tonsils, lymph glands, spleen, saliva, blood and muscles. The last two locations are most noteworthy for humans since we come in contact with blood while field dressing and/or processing a harvested animal and we eat the muscle tissue. Research suggests prion concentrations may be somewhat lower in muscles than other tissues, but they are still present.

"The World Health Organization and Centers for Disease Control and Prevention both state there is no evidence that humans can contract the disease from eating CWD-infected cervids."

New Research into Transmission

A more recent study identified the prions in blood and saliva. These locations are important from a disease transmission standpoint. It raises the possibility that biting insects that feed on blood may have the ability to transfer the disease from CWD-positive animals to other individuals. It also raises the possibility that CWD-positive animals can transmit the disease via saliva at bait stations, feed and mineral sites, rubs, scrapes and through social grooming. Hunters know the branch above a scrape is referred to as the "licking" branch, and we know bucks lick and rub their forehead glands on rubs. Many hunters have also viewed submissive bucks licking a dominant buck's forehead. Young bucks, especially yearlings, are generally submissive to older bucks. We know a high percentage of yearling bucks disperse 1 to 5 miles from their natal range, so infected yearling bucks potentially could serve as major disease transmission vehicles. We say they "potentially could serve" because we are merely speculating. Research hasn't identified this occurring in free-ranging populations. Also, the disease doesn't appear to move within a region by leaps that would result from yearling dispersal. Future research will hopefully shed more light on exact modes of transmission.

States and Provinces With Confirmed Cases of CWD in Cervids (Deer, Elk, Moose)
*As of December 2008

State	Wild	Captive
Colorado	●	●
Illinois	●	
Kansas	●	●
Michigan		●
Minnesota		●
Montana		●
Nebraska	●	●
New Mexico	●	
New York	●	●
Oklahoma		●
South Dakota	●	●
Utah	●	
West Virginia	●	
Wisconsin	●	●
Wyoming	●	●

Canadian Province	Wild	Captive
Alberta	●	●
Saskatchewan	●	●

What Do We Know For Certain About CWD?

CWD is always fatal to infected deer, and there is no vaccine or cure.

The probability of infection increases with age in whitetail bucks and does with adult bucks being nearly twice as likely as adult does to be infected. You need to keep this statistic in perspective however, as many deer populations contain a much higher percentage of adult does than bucks. This finding isn't a reason to return to traditional management programs and remove the majority of bucks at an early age.

"The QDMA recommends full authority over captive cervid facilities and regulations lie with the state wildlife agencies, not with state departments of agriculture."

The clinical signs of CWD are emaciation, incoordination, a drooping head and ears, and excessive drooling, drinking and urination. It is important to note these symptoms are also seen in deer infected with hemorrhagic disease (HD). HD is the most common deer disease, and it routinely kills deer throughout the United States, especially the Southeast.

CWD's clinical signs typically develop from one and a half to three years after exposure. Thus, infected deer generally appear healthy while they may be passing the disease to others. No deer has ever recovered once clinical signs developed, and animals generally live from a few weeks to several months after developing clinical signs.

CWD is expensive. Wisconsin spent over $32 million on CWD from 2002-2006, and sadly the CWD infection rate in the "core area" of Wisconsin hadn't declined. In 2008, CWD was confirmed in a Michigan deer farm. This incident forced implementation of the Department of Natural Resources' and Department of Agriculture's Surveillance and Response Plan for CWD. Per the plan, baiting for deer became illegal in the southern peninsula and according to Michigan's House of Representatives, "A ban on baiting throughout the entire Lower Peninsula for 2008 would result in

millions of dollars of economic cost to farmers and retailers and would result in a wide ranging loss of employment and the ruin of some small markets, stores, and farms."

CWD is even expensive for states where it has not been confirmed. According to a recent survey by QDMA, states spend an average of $25 per sample for a CWD test (costs range from $10 to $95) and test several hundred to several thousand samples yearly!

"CWD monitoring is expensive. According to a recent survey by QDMA, states spend an average of $25 per sample for a CWD test, and states test several hundred to several thousand samples yearly."

CWD: The Doom of Deer Hunting?

As hunters and managers, what can we expect in the future? We can expect CWD will likely be found in new states/provinces and new areas in current CWD-positive states/provinces. We can expect to see a lot of research on CWD and its mode(s) of transmission, and we can expect pressure from deer farmers to open state/provincial borders and allow movement of captive animals. We can also expect changes in deer season regulations such as extended seasons and increased bag limits. Currently, the best way to limit the spread of CWD in free-ranging herds is to reduce deer populations to minimize contact between individuals.

Will CWD mark the end of deer hunting? Probably not, but we must be vigilant to balance deer herds with their habitats, minimize transmission of CWD in infected areas, prevent introduction of CWD in new areas, and support research and our state/provincial agency's efforts. The sum of these items equates to being a good steward of our deer resource.

QDMA's Recommendations

Disease transmission from captive to free-ranging cervids is a major threat to the future of wildlife management in North America. The QDMA recommends maintaining or enhancing strict movement restrictions and testing protocols on captive cervids. The QDMA also recommends full authority over captive cervid facilities and regulations lie with the state wildlife agencies. Currently, some state wildlife agencies have this authority while the Department of Agriculture shares it or maintains sole possession in others.

QDMA in Action

The QDMA has engaged in this issue at the state and federal levels, including being the first whitetail organization to join the CWD Alliance, co-hosting a statewide CWD symposium, and hosting several seminars to provide information to concerned sportsmen and women. The QDMA also authored a letter on behalf of several members of the American Wildlife Conservation Partners to the U.S. Department of Agriculture's Animal and Plant Health Inspection Service regarding CWD testing and animal movement protocols.

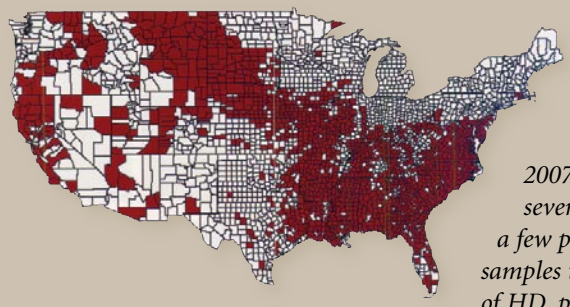
***QDMA Members in Action**. In Wisconsin's CWD Disease Eradication Zone (DEZ), Wisconsin DNR has struggled to reduce deer density, and surveys show declining enthusiasm for hunting and lack of cooperation with doe harvest goals among DEZ hunters. But QDMA members are providing some exceptions. The Bur Oak Deer Management Cooperative is made up of dozens of landowners and hunters cooperating to manage deer on more than 4,500 acres in the DEZ. Started by QDMA members, the Cooperative has been successful at reducing deer density while increasing mature buck numbers and hunting quality (results of an annual "shed antler hunt" are seen at left). Because hunting enthusiasm is growing among Cooperative participants, hunters remain engaged in population management, and DNR's goal of deer density reduction is being achieved on a local level.*

Hemorrhagic Disease

Incidences of hemorrhagic disease (HD), including both epizootic hemorrhagic disease (EHD) virus and bluetongue virus, were few and far between in 2008. That's good news, as 2007 went in the books as the worst year for the disease in at least 50 years. The high profile of the disease that year raised concerns among hunters across the nation about whether HD impacts deer populations or negatively affects Quality Deer Management (QDM) efforts, and whether HD can be prevented.

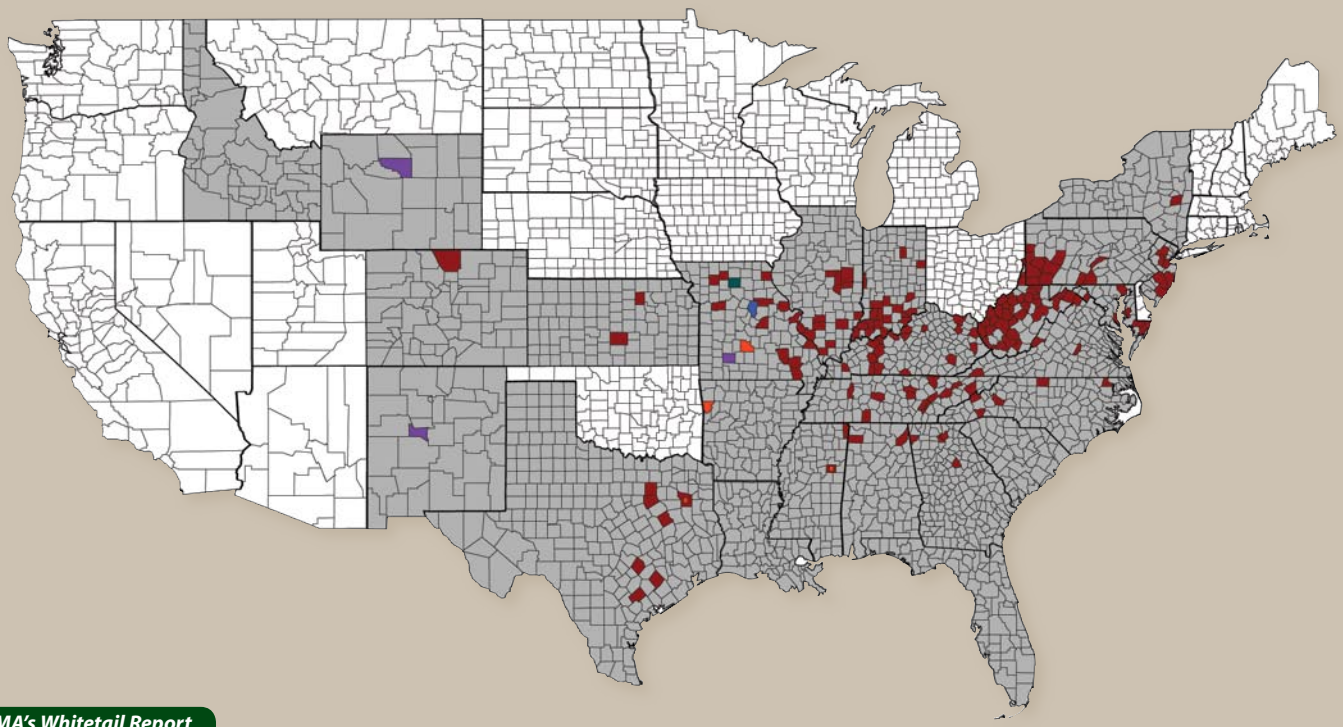
According to the Southeastern Cooperative Wildlife Disease Study (SCWDS), HD is an infectious, viral disease of deer and elk. It is a blood-borne disease transmitted to deer by biting midges or flies. HD is the most important infectious disease of white-tailed deer, and outbreaks occur nearly every year in the Southeast. HD is caused by either of two closely related viruses, EHD virus or bluetongue virus. Since the disease features produced by these viruses are indistinguishable, a general term, "hemorrhagic disease," often is used when the specific virus responsible is unknown. Since EHD and bluetongue viruses are transmitted by biting flies (gnats, no-see-ums) HD is seasonal and occurs in late summer and early fall. It was first reported in the U.S. in 1955 in New Jersey and has been confirmed in more than 30 states since. The Southeast is most affected, but the disease ranges as far north as New York and New Jersey in the Northeast, across the Midwest to Montana and southern Canada, and to Washington, Oregon and California on the west coast.

Quotable QDMA:
"While hunters may focus on losses of individual mature bucks, the evidence indicates that HD strikes bucks and does of all ages equally."



Record-Breaking Outbreak of 2007

The map at left, created by the Southeastern Cooperative Wildlife Disease Study (SCWDS) at the University of Georgia, depicts nationwide distribution of HD in wild deer from 1980 to 2003. The map below shows locations of positive cases from 2007 alone, the most severe outbreak on record. This outbreak included several strains of both bluetongue and EHD viruses in whitetails, and a few pronghorn and mule deer (states in gray are those that submitted samples to SCWDS for testing). Note the impact in areas with less history of HD, plus the first-ever case in New York state.



The severity of disease outbreaks is influenced by the number of deer exhibiting immunity to the disease, the virulence of the infecting virus, the number of livestock nearby (because they can carry the virus), and the abundance of midge vectors. Herd density may also play a role as high-density herds may have higher mortality rates, but the relationship between deer density to the severity of HD is not clear-cut. The disease occurs annually, but its distribution and severity are highly variable.

Regional deer herds are impacted differently. According to SCWDS records, in coastal regions of the Southeast, most adult deer have antibodies to the disease and disease outbreaks are rare. In piedmont regions, many adult deer have antibodies but disease outbreaks occur every five to 10 years. In mountainous regions, antibodies are rarely formed in deer and disease tends to occur in sporadic outbreaks, often with higher death losses. Besides being illegal, this is one reason why releasing "big northern bucks" to increase the body and antler size in southern deer herds does not work. Northern deer are poorly suited to deal with southern climates and disease vectors.

Initially, infected deer may appear normal or show mild signs of illness. Five to 10 days following exposure, animals may appear depressed; feverish; have a swollen head, neck, tongue or eyelids; have difficulty breathing or lose their appetite and fear of man. Deer may have ulcers on their tongue, an eroded dental pad, or interrupted hoof growth. Internally, deer may have fluid-filled lungs, cardiac hemorrhage, a congested rumen or scarred rumen lining depending on virulence of the virus and duration of infection. Deer not previously exposed to the disease often die within five to 10 days. Mule deer, bighorn sheep and pronghorn antelope are also susceptible to HD. Even though chronic wasting disease and HD share many symptoms, the two aren't related. Chronic wasting disease is caused by abnormal prions and is neither viral nor bacterial, while HD is caused by a virus.

There are three forms of HD – peracute, acute and chronic. Depending on virulence of the viral strain, the peracute form can kill deer in one to three days. Acute is the classic form, and deer may live for several days. The chronic form is typified by growth interruptions on the hooves, and deer often survive this form. Deer that survive develop immunity to the disease, and does may pass temporary immunity to their fawns through their milk. Most deer that die do so around water because they develop high fevers and seek water to cool their bodies.

Since the disease is spread by insects, there is little we can do to prevent it and outbreaks will end

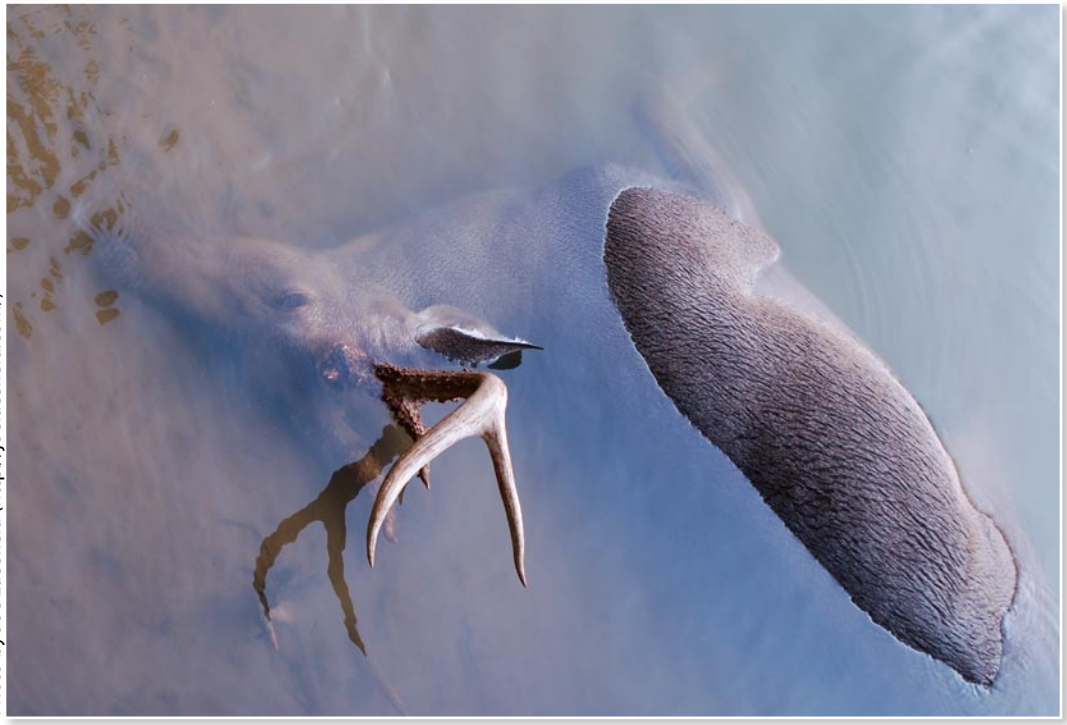


Photo by Joe Lacefield (http://joelacefield.com/)

Because deer develop high fevers and thirst when suffering from HD, they often seek water to cool their bodies. As a result, many deer that die of HD are found in or near bodies of water.

Fact Box: HD

- HD is the most significant viral disease of white-tailed deer.
- Strains of bluetongue virus (BTV) and epizootic hemorrhagic disease virus (EHDV) cause HD, but they do not infect humans.
- Since 2004, strains not previously seen in the United States (BTV-1 and -3, and EHDV-6) have been found in deer with HD. How they arrived here is not yet understood.
- An unusually severe and widespread outbreak (primarily EHDV-2) occurred in 2007.
- HD viruses are transmitted by small biting midges ("no-see-ums"), not by direct contact between deer.
- HD occurs during peak times of midge activity in late summer and early fall and subsides after freezing weather.
- Severity of disease and mortality generally are greater in the northern range of HD compared to southern regions. This may be due in part to acquired herd immunity in southern regions due to more frequent exposure to the virus.
- Deer populations have flourished despite recurring HD outbreaks dating back at least to the 1880s indicating HD has not limited deer population expansion.
- HD is not density driven and it affects susceptible deer regardless of age or gender, therefore it is not a long-term limitation to QDM efforts.
- Predicting severe HD outbreaks in particular years currently is not possible.
- There are no effective tools for preventing or controlling HD in wild deer.
- Hunters should promptly report sick or dead deer to the state wildlife agency.

with the onset of cold weather. A good, hard frost will kill or drive the majority of insects responsible for the disease into winter inactivity.

In 2007, numerous states reported HD mortality. According to Dr. John Fischer from SCWDS, there was extensive white-tailed deer mortality in 2007 in Southeastern, Mid-Atlantic and Midwestern states. SCWDS received suspected or confirmed HD activity from 812 counties in 31 states, and this is approximately twice the number of counties that report HD during years of moderate activity. Estimated mortality of more than 100 deer per county was reported in 11 states (Illinois, Indiana, Kentucky, Missouri, North Carolina, Ohio, Pennsylvania, South Dakota, Tennessee, Virginia and West Virginia). Overall, reports estimated mortality of greater than 65,000 deer.

Deer have flourished in North America despite being subjected to repeated outbreaks of HD for at least a century that we know of, and probably much longer. Nevertheless, when Quality Deer Managers work diligently over multiple seasons to increase numbers of mature bucks, finding even one quality buck that is a victim of HD is frustrating. While hunters may focus on these losses, the evidence indicates that HD strikes bucks and does of all ages equally. Although HD's impact on deer populations is minor on a nationwide scale, it can be locally severe. Hunters who experience significant losses should closely monitor population indicators to determine if reducing the local doe harvest would be appropriate.

It's important to note that humans are not at risk by handling infected deer, eating venison from infected deer, or being bitten by infected midges. Our dogs and cats are not at risk either. Fortunately, most of our deer herds were spared from this disease in 2008. We don't know what 2009 will bring, and while we each hope we don't lose any deer from our local areas to the disease, we can rest assured that overall, our deer herds will do just fine.

References:
SCWDS HD brochure - http://www.uga.edu/scwds/HD.pdf
SCWDS Final Report 2007 HD Activity

"Deer have flourished in North America despite being subjected to repeated outbreaks of HD for at least a century that we know of, and probably much longer."

Photos by Joe Lacefield (http://joelacefield.com/)

If you harvest a deer that displays cracked hooves like these (above), it is an indication that the deer recently survived HD. Although it is too late to determine which virus strain was involved, you should still report this finding to your state wildlife agency to help in tracking outbreaks.

Hunter Numbers, Demographics and Trends

Most sportsmen and women realize that hunters are the backbone of wildlife management programs and that they fund the lion's share of our state wildlife agencies. Most also know that hunter numbers are in a steady decline, but fewer realize that the number of big game hunters is only slightly declining or that some states actually have more hunters today than a decade ago. Let's look at some of the more meaningful statistics and gauge the positive impacts hunters – and especially deer hunters – have on society.

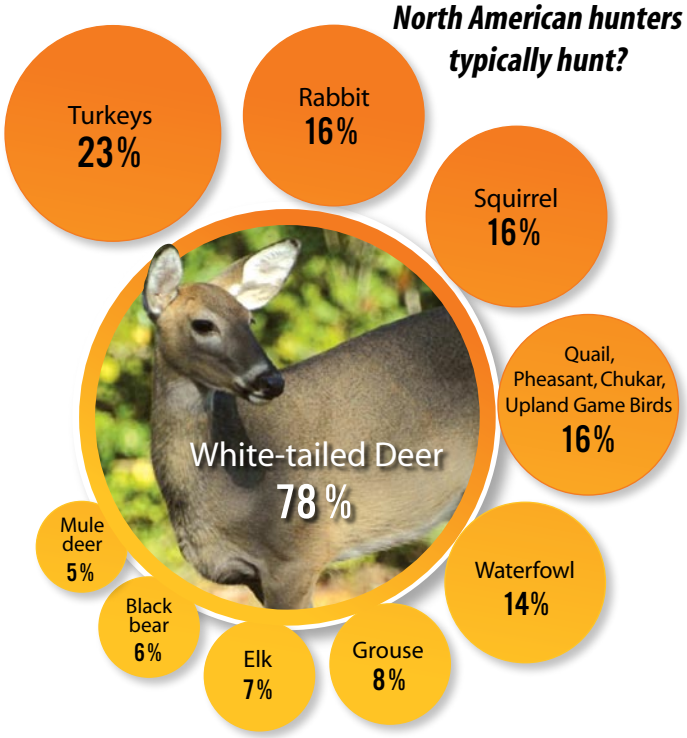
Data Sources

The following data are from the U.S. Fish and Wildlife Service's (USFWS) 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation, the National Shooting Sports Foundation's (NSSF) 2008 Industry Reference Guide, and the Congressional Sportsmen's Foundation's (CSF) 2007 report, Hunting and Fishing: Bright Stars of the American Economy. The USFWS report used data through 2006 for hunters 16 years and older while the NSSF report used data through 2006 for hunters of all ages. The data sets aren't exact but the numbers are still comparable, especially when viewing five and 10-year trend data.

Hunters by the Numbers

According to the USFWS, 5 percent of the U.S. population 16 years and older hunted in 2006. That was roughly 12.5 million hunters. Of those hunters, 10.7 million (86 percent) hunted big game and 10.1 million (94 percent) of those hunted deer. These numbers suggest deer hunters comprised about 78 percent of all hunters 16 years and older in 2006. This highlights the importance of deer hunting and re-emphasizes that deer drive the hunting industry. In 1996 there were 14 million hunters (16+ years), so we lost around 10 percent of them by 2006. This isn't a preferred trend, but it's worth noting during that decade the number of big game hunters remained relatively stable with only a 5 percent decline and only a 2 percent decline from 2001 to 2006.

What species do active North American hunters typically hunt?



Source: Responsive Management/National Shooting Sports Foundation, 2008 (Multiple responses allowed. Spheres are proportional in area to the percentages in the survey results)

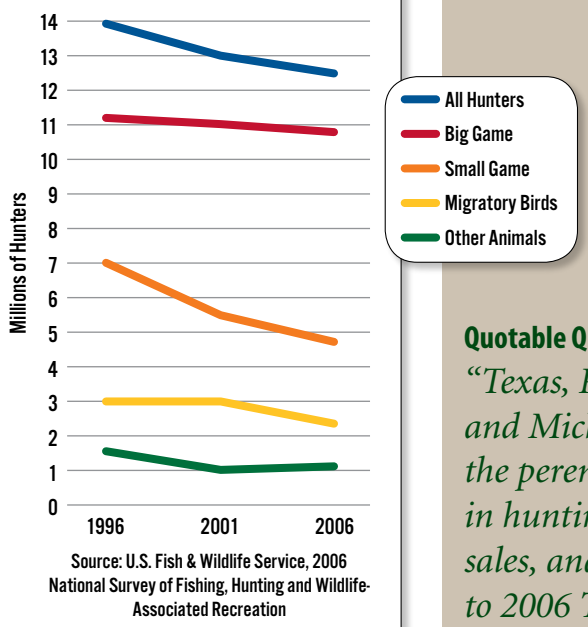
Hunters Lost and Found

There are multiple ways to calculate hunter participation rates, however, according to NSSF, 35 states lost hunters from 1996 to 2006. Rhode Island lost 19 percent of its hunters while South Carolina lost 17 percent, Connecticut lost 16 percent, New Hampshire lost 15 percent, and Massachusetts lost 14 percent. New England took quite a hit with respect to hunter numbers. However, 15 states increased their number of hunters during that decade. Georgia, North Dakota and Tennessee all increased their number of hunters by about 16 percent, and Oklahoma and South Dakota both

Quotable QDMA:
"Deer hunters comprised about 81 percent of all hunters 16 years and older in 2006. This highlights the importance of deer hunting and emphasizes that deer drive the hunting industry."

"According to the NSSF, 35 states lost hunters from 1996 to 2006. However, 15 states increased their number of hunters during that decade."

gained nearly 10 percent. Noticeably absent from these lists are the "Big 3". Texas, Pennsylvania and Michigan are the perennial leaders in hunting license sales and from 1996 to 2006 Texas held steady with less than a 1 percent decline while license sales dropped nearly 6 percent in Pennsylvania and over 8 percent in Michigan. That means Pennsylvania and Michigan each lost approximately as many hunters during that time period as there are in Connecticut, Delaware, Hawaii, Massachusetts and Rhode Island combined!



Source: U.S. Fish & Wildlife Service, 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation

Although hunter numbers declined 10 percent from 1996 to 2006, the most stable sector of hunters was "big game," including deer, turkey and bear. Big game hunters declined only 5 percent from 1996 to 2006, and only 2 percent in the second half of that time period (2001-2006), suggesting that the rate of decline is slowing.

No Bubbas Here

Data from the NSSF showed in 2006 the average deer hunter was 43 years old, white (96 percent), male (91 percent), and married (73 percent) with a household income of nearly $60,000. He also hunted deer an average of 13 days per year, and nearly 20 percent had four or more years of college education.

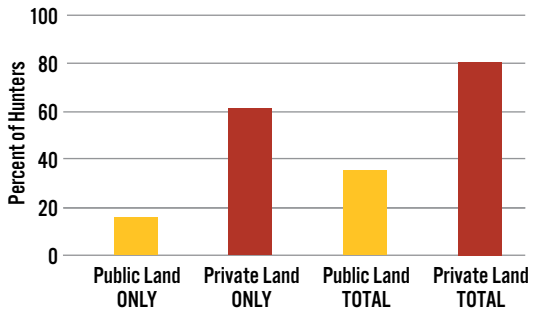
Deer Rule

The USFWS report showed deer hunting was nearly four times more popular than turkey hunting (the next most sought after species). Deer hunting is popular across the U.S. but in some places more so than others. For example, 96 percent of all hunting in Pennsylvania is for big game. Granted, Pennsylvania has its share of ruffed grouse and waterfowl, and turkey and bear are included in the percentage of big game hunting, but make no mistake that deer dominate the hunting scene in the Keystone state. Also notable, big game hunting constituted 95 percent of the hunting in Maine, Michigan, New York and Wyoming.

Quotable QDMA:
"Texas, Pennsylvania and Michigan are the perennial leaders in hunting license sales, and from 1996 to 2006 Texas held steady with less than a 1 percent decline while license sales dropped nearly 6 percent in Pennsylvania and over 8 percent in Michigan."

Hunting Where and How

The USFWS report also showed 16 percent of big game hunters hunted only public land while 61 percent hunted only private land. The rest hunted both. Of all hunters in 2006, 2.5 million (20 percent) used a muzzleloader, 3.5 million (28 percent) used a bow, and 11.6 million (93 percent) used a rifle, shotgun or handgun. These statistics are encouraging as the number of archery and muzzleloader users continues to climb while the number of other firearms users remains high. This means more hunters are taking advantage of additional opportunities and seasons, and that is good for hunter retention.



Source: U.S. Fish & Wildlife Service, 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation

Hunter Recruitment

Recruitment is retention's companion. Fortunately the NSSF, U.S. Sportsmen's Alliance (USSA) and National Wild Turkey Federation started the Families Afield Initiative in 2004. Families Afield is an education and outreach program to help states create hunting opportunities for youth. Some of the research-based core values of Families Afield include that parents rather than politics should decide an appropriate hunting age for their children, and youths should experience hunting with an adult mentor before attending a hunter education course. The program urges states to review and eliminate unnecessary hunting age restrictions and ease hunter education mandates. The goal is to send more new hunters

"The number of archery and muzzleloader users continues to climb while the number of other firearms users remains high. This means more hunters are taking advantage of additional opportunities and seasons, and that is good for hunter retention."

to hunter education classes and reverse the trend of declining sportsmen's numbers. Fortunately it's working. Since 2005, 27 states have enacted legislation lowering age barriers for new big game hunters. Through the REACH program, QDMA actively supported Families Afield legislation in these states. As of spring 2008, more than 87,000 new hunters had taken to the field thanks to Families Afield legislation.

The hunter recruitment efforts of many organizations and agencies may be starting to pay off: the rate of decline in big-game numbers appears to be slowing. These scenes are from QDMA's 2008 National Youth Hunt, just one of countless youth hunting events held by QDMA and other conservation organizations around the nation each year.

Hunting's Approval Rating

While only 5 percent of the U.S. population 16 years and older hunts, a mere 3 percent of Americans live the animal rights philosophy. More importantly, 73 percent of Americans approve of hunting while only 10 percent believe it should be illegal. These are encouraging numbers but we must be vigilant in our approach to stop the overall decline in hunter numbers and then begin rebuilding them. There is no question the loss of hunters negatively impacts our wildlife management programs and state wildlife agencies and threatens the future of hunting. However, as hunters and wildlife managers we can best combat this by recruiting from outside as well as within our ranks, by adhering to the highest ethical standards in our pursuits, and above all by being good stewards of our natural resources and therefore a benefit to all society.

"While only 5 percent of the U.S. population 16 years and older hunts, a mere 3 percent of Americans live the animal rights philosophy."

References:

U.S. Fish & Wildlife Service, 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (http://library.fws.gov/nat_survey2006_final.pdf)

National Shooting Sports Foundation, 2008 Industry Reference Guide.

Congressional Sportsmen's Foundation 2007 report – Hunting and Fishing: Bright Stars of the American Economy (http://www.nssf.org/07report/CompleteReport.pdf)

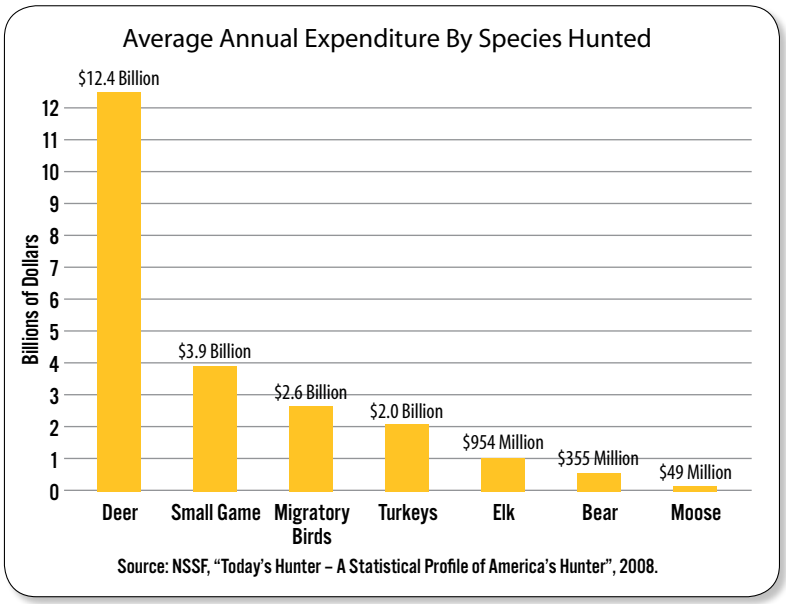
U.S. Sportsmen's Alliance (http://www.ussportsmen.org/Page.aspx?pid=529)

Economic Impacts of Deer Hunting

Did you know that hunters spend more on their activity ($23 billion) than the total revenues of McDonald's? They also spend more on lodging ($614 million) than the annual revenues of Comfort Inn, Comfort Suites, Quality Inn, Econolodge, Rodeway Inn and Sleep Inn combined. In 2006, the National Sporting Goods Association stated hunting and shooting-related equipment surpassed golf in sales, making it number two on the athletic and sports equipment sales list. Only exercise equipment generated more sales, and if hunting were a corporation it would rank in the top 20 percent of the Fortune 500 list of America's largest companies (ahead of Coca-Cola).

Hunters contribute more than $66 billion to the U.S. economy annually. They also contribute $9.1 billion each year to local, state and federal taxes. This is enough to pay the average salaries of 454,000 firefighters, 476,870 teachers or 527,900 police officers. Hunters' spending supports close to 600,000 jobs and that's more than the number of people employed by the McDonald's corporation. Texas leads the list of states as Lone Star hunters spend $2.3 billion, support 47,000 jobs and contribute $262 million to state taxes and $310 million to federal taxes annually!

In 2006, deer hunters spent $12.4 billion on their favorite pastime. This sum includes expenses for food, lodging, equipment, licenses and many other necessities, and is over half (52 percent) of the total expenditures from all hunters for every species pursued. The average deer hunter spends $31.79 on taxidermy services each year. Combined, that means deer hunters spend nearly $3.2 million per year at taxidermy shops. The average deer hunter also spends nearly $207 on land each year. That equates to over $2 billion on land fees!



Given there are just over 10 million deer hunters in the U.S., the average deer hunter spent $1,238 in 2006 on the above items. This is more than the average elk hunter ($1,201), moose hunter ($1,097), bear hunter ($896), migratory bird hunter (average of $842), turkey hunter ($799), or small game hunter (average of $517).

With regard to region, deer hunters from the South Central Region spent the most. They spent over $1,500 each for the above-mentioned items. Southeast deer hunters were next with an average of $1,309, followed by deer hunters from the Great Lakes ($1,193), West ($1,113), Northeast ($1,019), Northern Plains ($764) and Alaska ($401). In total expenses, South Central deer hunters topped the list with over $2.9 billion, followed by deer hunters from the Great Lakes ($2.8 billion), Northeast ($2.5 billion), Southeast ($2.4 billion), Northern Plains ($834 million), West ($723 million), and Alaska ($6.9 million). Since deer hunters far outnumber other species' hunters and they spend more to pursue their chosen species, it's not surprising that deer drive the hunting industry.

Quotable QDMA:
"In 2006, deer hunters spent $12.4 billion on their favorite pastime. This sum is more than half (52 percent) of the total expenditures from all hunters for every species pursued."

References:
NSSF report - Today's Hunter: A Statistical Profile of America's Hunters (2008 edition)
NSSF 2008 Industry Reference Guide

Deer-Vehicle Collisions

Many areas within the whitetail's range have abundant or overabundant herds. Overabundant herds cause hundreds of millions in damage each year to the forestry and agricultural industries, and they damage homeowners' shrubs, flowers, ornamentals and vegetable gardens. While these damages are costly, they don't compare to the expense caused by deer-vehicle collisions (DVCs). According to Dr. Michael Conover, Director of the Berryman Institute at Utah State University, DVCs are responsible for an estimated 200 human fatalities, 29,000 injuries and over $1.1 billion in property damage each year.

The Insurance Institute for Highway Safety estimates there are 1.5 million DVCs each year in the U.S. Given there are about 32 million whitetails in the U.S., this suggests one of every 21 deer will be involved in a DVC. These DVCs are a public safety concern and a waste of a natural resource, in addition to being a personal expense for motorists. DVCs occur most often at dawn and dusk and during spring (fawning) and autumn (breeding).

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"Given there are about 32 million whitetails in the U.S., this suggests one of every 21 deer will be involved in a deer-vehicle collision."

Actual DVC data is difficult and time consuming to collect. Obtaining comparable data among states is even more difficult as some do not record this information while others rely on various state agencies or private contractors for their figures. Fortunately, State Farm Insurance Company compiles a state-by-state list of projected DVCs based on their insurance claim reports. This data may or may not be completely accurate for a given state, but it is the best data available to track annual DVCs within a state and compare DVCs among states. The following statistics are from State Farm data collected from 2002 to 2007.

DVCs State by State

Pennsylvania led the nation four of the five years in DVCs by averaging about 99,000 per year. Michigan led the nation once and was second four of the five years by averaging about 93,000 DVCs. Pennsylvania and Michigan more than double the average of the next top five states. At the other end of the spectrum, the District of Columbia and Nevada averaged about 300 and 900 per year, respectively. The top 10 states for DVCs over the five year period were Pennsylvania, Michigan, New York, Ohio, Illinois, Wisconsin, Virginia, Georgia, North Carolina and Texas.

Many factors impact the number of DVCs. Growing human and deer densities, urbanization, development, proximity of forested areas to roadways, and number of vehicles, road miles, and miles traveled are a few. On a national scale, deer populations are not increasing, but numbers of regis-

"Wildlife warning reflectors supposedly deter deer from entering roadways by using light from oncoming vehicles to provide an "optical warning fence" to deer. Researchers found the reflectors were ineffective in preventing DVCs. They also noted that reflectors using red and blue lenses actually increased the likelihood of a DVC."

tered vehicles and miles of highway are rising steadily. However, as rural areas become suburbanized, deer hunting opportunity is reduced drastically, and, in these local areas, deer herds can easily expand.

Texas and California lead the nation in public road miles and vehicle miles traveled but ranked 10 and 20 in DVCs. While Pennsylvania and Michigan led the nation in DVCs, they were ranked 8 and 9 in the number of road miles and miles traveled. Pennsylvania also led the nation in the average number of DVCs per mile of road, at 0.82. This means Pennsylvania motorists hit one deer for every 1.22 miles of public road. Similarly, Maryland drivers hit one deer for every 1.23 miles of public road.

You can also analyze DVCs by the number of vehicles in a state. West Virginia led this list with a DVC for every 57 vehicle registrations. Michigan (1 in 86), Wisconsin (1 in 99), Pennsylvania (1 in 100) and Iowa (1 in 109) round out the top five, and the national likelihood of hitting a deer is 1 in 216.

DVCs and Deer Harvest

An additional way to analyze these data is to compare the number of DVCs to the legal harvest by hunters. Ideally, DVCs would be equivalent to a small percentage of the legal harvest. Looking at the top 10 DVC states in 2006-07 revealed that DVCs averaged 20 percent of the 2006 legal harvest in those states, meaning that motorists hit a deer for every five taken by hunters. Texas and Wisconsin led the list with DVCs equivalent to only 9 percent of their legal harvests. New York was at the bottom of the top 10 with DVCs equivalent to 34 percent of its 2006 legal harvest. Ohio and Pennsylvania were close behind with DVCs equivalent to 27 percent of their 2006 harvests.

Reducing DVCs

How can you reduce DVCs? Various techniques from "deer whistles" to wildlife warning reflectors to signs and fences have been tried. Deer whistles emit high frequency sounds that supposedly scare deer from roadways. Research on the hearing ability of deer reveals they don't hear well in the high frequency range, and there is no data to support that deer whistles deter deer from entering roadways or reduce DVCs. Wildlife warning reflectors supposedly deter deer from entering roadways by using light from oncoming vehicles to provide an "optical warning fence" to deer. Dr. Gino D'Angelo and his colleagues at the University of Georgia found the reflectors were ineffective in preventing DVCs. They also noted that reflectors using red and blue lenses actually increased the likelihood of a DVC. Road signs are used by many states to alert drivers to the possibility of deer entering the roadway. Signs in new locations may work temporarily, but drivers quickly acclimate to them and their effectiveness declines. Fences can successfully keep deer and other

Deer-Vehicle Collisions and Road Miles by State

Note: States are ranked in the chart by average annual number of DVCs, from most to least (Source: State Farm Insurance)

STATE	2002-07 Average Annual DVCs	2002-05 Average Public Road Miles	Average DVC/Road Mile
PENNSYLVANIA	98,937	120,503	0.82
MICHIGAN	93,072	122,022	0.76
NEW YORK	60,751	113,457	0.54
OHIO	56,588	124,500	0.45
ILLINOIS	47,380	138,580	0.34
WISCONSIN	45,384	113,508	0.40
VIRGINIA	41,819	71,423	0.59
GEORGIA	39,486	116,718	0.34
NORTH CAROLINA	35,314	102,424	0.34
TEXAS	33,488	302,778	0.11
INDIANA	32,748	94,764	0.35
MINNESOTA	30,790	132,000	0.23
IOWA	28,934	113,693	0.25
MISSOURI	27,474	125,279	0.22
MARYLAND	25,031	30,818	0.81
NEW JERSEY	24,697	38,046	0.65
WEST VIRGINIA	23,772	37,007	0.64
ALABAMA	20,555	95,099	0.22
SOUTH CAROLINA	19,792	66,228	0.30
CALIFORNIA	19,583	169,286	0.12
TENNESSEE	17,888	89,061	0.20
KENTUCKY	16,465	77,692	0.21
ARKANSAS	15,160	98,573	0.15
MISSISSIPPI	11,201	74,079	0.15
FLORIDA	10,555	120,062	0.09
WASHINGTON	9,232	82,260	0.11
COLORADO	9,155	86,956	0.11
OREGON	9,105	65,749	0.14
LOUISIANA	9,089	60,935	0.15
CONNECTICUT	9,016	21,117	0.43
KANSAS	8,910	135,132	0.07
NEBRASKA	8,396	93,231	0.09
MONTANA	7,763	69,436	0.11
OKLAHOMA	7,165	112,691	0.06
SOUTH DAKOTA	7,076	83,689	0.08
NORTH DAKOTA	5,807	86,736	0.07
UTAH	5,176	42,902	0.12
MASSACHUSETTS	4,750	35,683	0.13
MAINE	4,064	22,735	0.18
IDAHO	3,665	46,972	0.08
DELAWARE	3,237	5,969	0.54
WYOMING	3,029	27,549	0.11
NEW HAMPSHIRE	2,705	15,582	0.17
VERMONT	2,573	14,353	0.18
ARIZONA	2,202	58,148	0.04
NEW MEXICO	1,841	63,275	0.03
RHODE ISLAND	1,297	6,344	0.20
ALASKA	952	14,206	0.07
NEVADA	901	34,358	0.03
DISTRICT OF COLUMBIA	280	1,518	0.18
HAWAII	48	4,312	0.01

wildlife off roadways but they can also block travel corridors and alter movement patterns. Fences are also expensive to erect, and research by the USDA Animal and Plant Health Inspection Service showed a minimum of 7- to 8-foot fences were necessary to keep the majority of deer from jumping over them. In their trials, 91 percent of deer jumped a 6-foot fence while only one deer jumped a 7-foot and no deer jumped an 8-foot fence.

In closing, let's look at one final piece of DVC data. Of the top 10 DVC states, the average number of DVCs had increased over 9 percent from 2002-03 to 2006-07. North Carolina led this list with a 31 percent increase. Only two of the top 10 states had fewer DVCs in 2007 than in 2002-03. New York had nearly 3 percent fewer, and Pennsylvania reduced the number of DVCs by nearly 12 percent from over 111,000 to just over 98,000. This reduction was over 20 percentage points above the average. While that may still be a lot of DVCs, Pennsylvania implemented a progressive deer management program in 2002 and a large reduction in DVCs is just one of its many benefits. So, what's the best technique for reducing DVCs? Balancing the deer herd with the available habitat.

Can Sound Repel Deer From Roads?

Researchers with the University of Georgia took information they learned about deer hearing abilities and applied it to a subsequent field-based study to see how free-ranging deer would react to sound deterrents emitted from a moving vehicle. Researchers did not directly test commercial products like "deer whistles" because there is a wide variety of products available with little documentation of what sounds each product emits. Instead, they designed a sound system that gave them the ability to select specific frequencies of sound throughout the deer hearing range. The sound was transmitted from four speakers mounted above the bumper of a test vehicle (seen in the photo). They set up test areas along 200-yard sections of roadway at Berry College in northwest Georgia where deer are very abundant and deer-vehicle collisions are common. As individual deer approached the roadside, researchers drove the vehicle through the test area emitting one of the experimental sound frequencies.

In more than 300 trials, they studied deer reactions to a range of sounds from very low frequencies to ultrasonic frequencies. Only one frequency of sound changed deer behavior as compared to when the vehicle drove through the test area with no sound emitted from the system. The lowest frequency tested, 280 hertz, which sounds like the deep bass from a vehicle's stereo system, caused deer to be more likely to run within the path of the test vehicle. None of the other sounds tested deterred deer from the roadways, including the ultrasonic sounds that commercially produced deer whistles are claimed to emit. The results suggest that deer whistles would also be ineffective for the prevention of deer-vehicle collisions.

QDMA's Recommendations

The majority of deer-vehicle collisions occurs during spring (fawning) and fall (breeding). The best techniques for reducing deer-vehicle collisions are to reduce overabundant deer herds and make motorists aware of high-risk time periods. The QDMA recommends private, state and federal deer managers use regulated hunting to manage deer herds at levels that are in balance with the habitat. Balanced populations reduce the number of animals available for collisions, and knowledgeable motorists can drive more defensively.

For more information on DVCs and devices designed to minimize them visit: www.forestry.uga.edu/h/research/wildlife/wildlife/devices.

References:
State Farm Deer-Vehicle Collision data, 2002-2007

Quotable QDMA:
"What's the best technique for reducing DVCs? Balancing the deer herd with the available habitat."

Suburban QDM

Urban and suburban deer management are among the most pressing challenges for state wildlife agencies and local municipalities. Many states struggle to reduce and/or maintain deer populations at appropriate levels in rural areas even with the willing aid of hunters. Some deer populations are difficult to control even with property access, proficient hunters and favorable hunting seasons and bag limits. Add restricted property access, landowner unfamiliarity with hunting, safety zones and weapons discharge ordinances and you have made a difficult task even tougher.

Goals for managing deer in urban and suburban environments are similar to rural environments; balance the deer herd with the available habitat, balance the adult sex ratio, and have a complete age structure for bucks and does. However, there is generally a much higher emphasis on balancing the herd with the habitat to reduce deer-vehicle accidents and other deer-human conflicts. Unfortunately, controlling herd growth in these areas often is more difficult than in rural landscapes. Expanding deer herds in rural areas often increase until they degrade the habitat to the point where it can no longer provide enough food or cover to support the deer population. The quality of the habitat then declines and generally brings the size of the deer herd down with it. Many of these areas ultimately end up with poor quality habitat and low density deer herds. This is a no-win situation for the habitat, the human residents, the deer herd and other wildlife species. There are many examples of this scenario in the traditional "big" deer states like Michigan, New York and Pennsylvania.

Because traditional hunting is pushed out as suburban growth enters rural areas, deer populations usually expand and create problems for residents. Managed bowhunting by responsible, ethical hunters is an effective option, but hunters must educate homeowners to gain access.

In urban and suburban areas, as deer herds climb and degrade the habitat, you end up with poor quality habitat but you rarely get the corresponding drop in deer numbers. For example, look at Valley Forge National Historic Park in southeastern Pennsylvania. Despite severe habitat degradation, the deer herd has increased from approximately 155 to 240 deer per square mile over the past decade. In such instances the deer population continues increasing despite the loss of habitat because of two factors: 1) low mortality rates and 2) alternative food sources. Across their range, hunter harvest is the number one mortality source for deer. Other important sources include predation, deer-vehicle accidents and disease. In many urban/suburban deer herds, hunter harvest is low or nonexistent, as is mortality from predators. From a food perspective, urban/suburban environments offer abundant gardens, shrubbery and other landscaping, as well as supplemental feed from some homeowners. The point is that urban/suburban deer populations can remain high even in poor habitats, and the number one mortality source – and management tool – is not as easily applied as in rural areas.

Quotable QDMA:

"In urban and suburban areas, as deer herds climb and degrade the habitat, you end up with poor quality habitat but you rarely get the corresponding drop in deer numbers. "

Barriers to Sound Deer Management

Before hunting can be used as a management tool in urban/suburban areas, we need to understand the barriers currently preventing or limiting its use. One major barrier is a property owner's unwillingness to allow anyone – hunter or otherwise – access to his/her property. Recent court cases like Pennsylvania's Burns vs. Haas, in which a landowner was held liable for a shooting accident that occurred on his property, do little to increase property access for hunting. Fortunately, a new law further protects Pennsylvania landowners from future liability suits. Additionally, as managers and hunters we need to demonstrate the utility of hunting to these property owners. We need to make these property owners feel safe and comfortable about having hunters in their woods.

Another barrier is urban/suburban residents' views toward wildlife management. Many residents receive inaccurate information on potential strategies for managing the "town's" deer population. Some may want fewer deer but fear for their family's safety if weapons are discharged in their neighborhoods. Others may feel the situation can easily be addressed by trapping deer and releasing them elsewhere. Still others have heard about contraceptive techniques. Not everyone will support hunting, and hunting is not appropriate for every situation, but hunting can be used in far more areas and to a much greater degree than it is currently being used. The key to making this happen is education.

Living With White-tailed Deer

In early 2009, QDMA will release the community version of its new educational program, "Living with White-tailed Deer." Intended to educate the public on options for managing suburban deer populations, Living with White-tailed Deer was first released as a classroom program for middle and high schools.

The new community version is a multimedia DVD and CD intended for sharing with community groups who are dealing with a deer problem. The program provides an unbiased look at all of the options – including taking no action, trap-and-transfer, birth control, managed bowhunting and others. Real-world case studies show how each option does or does not work, and the advantages and disadvantages of each.

Living with White-tailed Deer is a great educational tool for hunters or other citizens working with homeowners to establish a deer management program. Purchase a copy and donate it to a local neighborhood or public library to spread the word about sound deer management through recreational bowhunting. Members of the media may request a review copy by contacting Randy Bowden at rbowden@qdma.com.

Around the nation, many hunter groups have organized programs in suburban areas that offer deer control through bowhunting. The key to success in all cases has been a strong educational effort aimed at homeowners and a well-organized program in which all hunters are proficient with their archery gear, responsible, ethical, conscientious, and respectful of homeowners.

A Real-World Success Story

One such program, organized in Upper Makefield Township in Bucks County, Pennsylvania, is called the Eccologix Urban Deer Management Progam. During the 2007-2008 hunting season, 25 bowhunters selected from among 300 applicants were allowed access to 65 properties, most of which are 3 to 5 acres. The archers harvested 443 deer, only four of which were antlered bucks (This represented 63 percent of the entire Township's harvest reported to the Pennsylvania Game Commission). For the year, 2007 saw 44 percent fewer road-killed deer in the Township than 2006, as reported by the contractor who collects road-kills. Compared to hired sharpshooters in a neighboring Township, Eccologix bowhunters harvested just three fewer deer, but 78 percent of their harvest was female deer compared to 60 percent by the sharpshooters. More importantly, the sharpshooters charged $125,000, while the Eccologix program cost $48,000. In rating Eccologix hunters after the season was over, 89 percent of Township residents surveyed chose "very satisfied" or "exceptional."

Living with White-tailed Deer

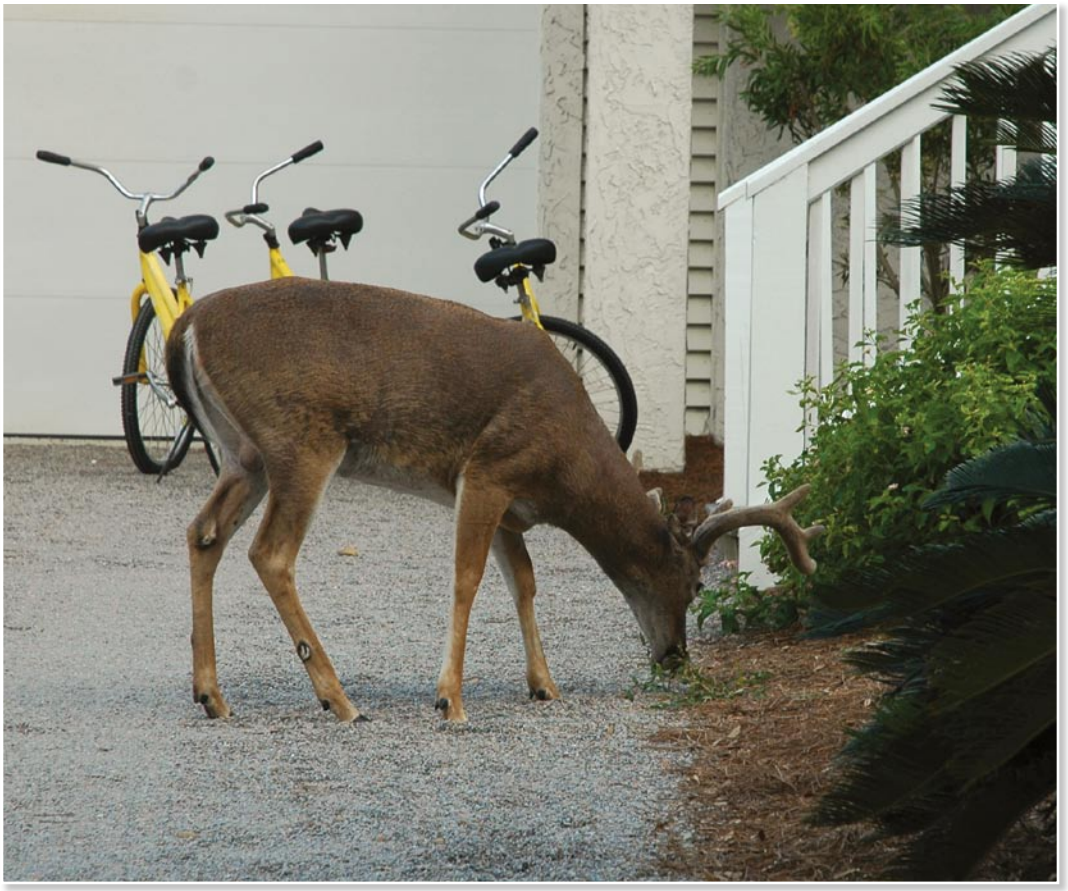
When programs like Eccologix are successful, hunters gain new hunting opportunity, and non-hunters witness the important role of hunting in sound deer management. One way to open more

Quotable QDMA:

"Compared to hired sharpshooters in a neighboring Township, Eccologix bowhunters harvested just three fewer deer, but 78 percent of their harvest was female deer compared to 60 percent by the sharpshooters. More importantly, the sharpshooters charged $125,000, while the Eccologix program cost $48,000."

suburban hunting opportunities is to provide urban/suburban residents with unbiased, scientific information on deer management strategies and let them decide which option(s) they prefer, or at least can live with. A new educational program, the community version of QDMA's *Living with White-tailed Deer* (LWWTD) provides the most up-to-date scientific information available. Including both a video documentary and printable supplements, LWWTD specifically targets urban/suburban residents and community leaders. It includes an information sheet on each of the seven most commonly used strategies, including advantages, disadvantages and associated costs for each. The video documentary covers contraception, predation, allowing nature to take its course, fencing and repellents, trapping, hunting and sharpshooting. The program does not tell the reader which option is the best, rather it provides the facts and lets the reader make his/her own decision – based on factual information – about which management strategy(s) is appropriate for them. LWWTD removes the emotion and misinformation from the decision-making process and will help remove barriers to managing deer in urban/suburban environments.

Urban and suburban deer management have been emerging challenges for state wildlife agencies and local municipalities. Given our country's rate of development and increasing human population, these deer management arenas will necessitate additional time and resources in the near future. The sooner we begin educating urban/suburban municipalities and other nontraditional hunting groups on the benefits of hunting, the sooner we begin adequately managing urban/suburban deer populations.



Quotable QDMA:
"One way to open more suburban hunting opportunities is to provide urban/suburban residents with unbiased, scientific information on deer management strategies and let them decide which option(s) they prefer, or at least can live with."

Quality Deer Habitat

Expanded seasons and increased antlerless licenses are not the sole culprits for fewer deer in some areas – habitat quality also is a factor. Proper habitat management is important for successful deer management programs. Balancing a deer herd with the habitat is best accomplished by harvesting the biologically appropriate number of does while simultaneously improving the habitat. In forested environments habitat quality is partly governed by the tree species present and their range of age classes. A range of age classes is important as mature forests only produce 50 to 100 pounds of browse per acre while early successional habitats can produce 1,000 to 2,000 pounds of browse per acre. Given the average deer eats approximately 2,000 pounds of forage per year, it is clear that early successional habitats provide a lot more forage and can sustain many more deer than mature forests.

Quotable QDMA:
"A range of forest age classes is important as mature forests only produce 50 to 100 pounds of browse per acre while early successional habitats can produce 1,000 to 2,000 pounds of browse per acre. "

Deer researchers at both Texas A&M-Kingsville and the University of New Hampshire have followed tame, free-roaming whitetails and recorded food selection for every bite. In both studies, deer selected an amazingly wide variety of forage and browse species. Clearly, habitat diversity – including early successional habitat – is critical to healthy deer populations. (Photo courtesy of the Caesar Kleberg Wildlife Research Institute, Texas A&M-Kingsville)

"Nationally only 18 percent of our forestland is in the early successional stage, down from 22 percent. If this trend continues, our habitat will support fewer deer, upland game birds, ground nesting songbirds and many other wildlife species."

It's important to note that, depending on the species present, mature forests may provide hard and/or soft mast in addition to browse. This is important to deer but mast availability varies seasonally and annually. It's also important to note that mature forests provide critical cover for deer. The point isn't that mature forests aren't important, rather that deer need a variety of habitat types and a diversity of age classes.

Early successional habitats provide abundant food and cover. This habitat type is created by removing the forest canopy and allowing ample sunlight to reach the forest floor. This provides ideal growing conditions for new seedlings, allowing a flush of new vegetative growth. The majority of this growth is within five feet of ground level so, in addition to providing cover, it is easily within a whitetail's feeding zone. A word of caution is necessary, however, as overabundant deer herds can

consume nearly all the vegetation in these regenerating sites. That's why herd and habitat management must be practiced concurrently.

In general, the QDMA recommends having 20 to 30 percent of an area's forest in early successional habitat. This leaves 70 to 80 percent in intermediate and mature stands. With less than 20 percent in early successional habitat, you sacrifice the amount of food and low ground cover you can provide to deer and other wildlife species.

Tracking Early Successional Habitat

Soils clearly play a vital role in habitat quality, and soils maps are readily available from Natural Resource Conservation Service offices. The amount of early successional habitat is also important for quality deer habitat, but how can you determine the amount of early successional habitat in a state or region? The U.S.D.A. Forest Service's website has a Forest Inventory and Analysis Mapmaker program that produces tables and maps for you. You can use it to measure forest age classes by land ownership within or among states, and even across years. For example, you could use it to determine that Maine gained over 740,000 acres of early successional habitat from 1995 to 2006, or that Michigan lost nearly 900,000 acres of early successional habitat from 1993 to 2007. Some of this habitat was lost to development, but much has simply grown into the pole timber stage. In fact, during that time period Michigan actually gained over 420,000 acres of forestland.

"Maine gained over 740,000 acres of early successional habitat from 1995 to 2006, while Michigan lost nearly 900,000 acres of early successional habitat from 1993 to 2007. Some of this habitat was lost to development, but much has simply grown into the pole timber stage."

The charts on the following pages of *The Whitetail Report* from the Forest Service's Mapmaker program reveal during the past two decades the U.S. has gained over 139 million acres of forestland. This is a 28 percent increase. Most of this increase is in the Midwest and West. They also reveal we added nearly 7.3 million acres of "small diameter" trees. Acreage with small diameter trees is synonymous with early successional habitat. Overall this sounds good, but nationally only 18 percent of our forestland is in the early successional stage, down from 22 percent. If this trend continues, our habitat will support fewer deer, upland game birds, ground nesting songbirds and many other wildlife species.

With respect to early successional habitat, some states have lost a lot:

- Alabama lost 4.5 million acres from 2000 to 2007.
- Georgia lost 1.6 million acres from 1997 to 2007.
- Mississippi lost over 1.7 million acres from 1994 to 2006.
- South Carolina lost over 1.1 million acres from 1993 to 2006.
- Texas lost over 800,000 acres from 1992 to 2007.
- Wisconsin lost over 1.3 million acres from 1996 to 2007.

However, even with these losses the above states still maintain 21 to 28 percent of their forestland in early successional habitat.

In contrast:

- Arkansas lost 1.1 million acres of early successional habitat from 1995 to 2007.
- New York lost nearly a half million acres from 1996 to 2006.
- Michigan lost nearly 900,000 acres from 1993 to 2007.
- Pennsylvania lost over 700,000 acres from 1989 to 2006.
- Tennessee lost over 1.4 million acres from 1996 to 2006.

Unfortunately, these states only maintain 11 to 19 percent of their forestland in early successional habitat.

Of particular interest in this list are "key deer" states like Michigan, New York and Pennsylvania. Hunters in these states have all enjoyed high deer densities in the past, and such densities were directly influenced by the amount of early successional habitat. As these states reduce their acres of young stands, they also reduce the number of deer and other wildlife these habitats can support. Expanded seasons and increased antlerless licenses are often blamed for reduced deer sightings by hunters, but in some instances the loss of early successional habitat may be the overriding factor for an area having fewer whitetails.

"Expanded seasons and increased antlerless licenses are often blamed for reduced deer sightings by hunters, but in some instances the loss of early successional habitat may be the overriding factor for an area having fewer whitetails."

Table 1. Total forestland acres by state as determined by U.S.D.A. Forest Service forest inventory data. This chart compares the most recent inventory data to data from one and two decades ago.

State	Year	Total acres	Year	Total acres	Forestland gained/lost	% change
Total		632,719,290		493,278,712	139,440,578	28%
AL	2007	22,618,645	2000	22,987,178	-368,533	-2%
AK	2007	14,922,255	1998			
AZ	2007	18,711,559	1999	19,426,195	-714,636	-4%
AR	2007	18,519,705	1995	18,789,076	-269,371	-1%
CA	2007	33,051,950	1994			
CO	2007	22,704,654	1984	8,881,946	13,822,708	156%
CT	2006	1,746,266	1998	1,859,227	-112,961	-6%
DE	2006	365,100	1999	382,763	-17,663	-5%
FL	2006	16,718,501	1995	16,222,467	496,034	3%
GA	2007	24,896,839	1997	24,414,232	482,607	2%
ID	2007	21,487,373	1991	17,871,839	3,615,534	20%
IL	2006	4,789,560	1998	4,330,075	459,485	11%
IN	2007	4,823,799	1998	4,502,711	321,088	7%
IA	2006	2,993,267	1990	2,053,183	940,084	46%
KS	2006	2,103,946	1994	1,545,317	558,629	36%
KY	2006	12,129,787	1988	12,672,873	-543,086	-4%
LA	2005	14,138,135	1991	13,790,938	347,197	3%
ME	2006	17,695,385	1995	17,699,335	-3,950	0%
MD	2006	2,437,800	1999	2,565,048	-127,248	-5%
MA	2006	3,054,986	1998	3,126,547	-71,561	-2%
MI	2007	19,710,192	1993	19,286,757	423,435	2%
MN	2007	16,723,532	1990	16,681,068	42,464	0%
MS	2006	19,622,417	1994	18,595,442	1,026,975	6%
MO	2006	15,078,279	1989	14,000,274	1,078,005	8%
MT	2007	25,589,056	1989	22,385,607	3,203,449	14%
NE	2006	1,317,206	1994	945,027	372,179	39%
NV	2005	11,088,930	1989	9,940,897	1,148,033	12%
NH	2006	4,730,665	1997	4,823,840	-93,175	-2%
NJ	2006	2,083,283	1999	2,132,145	-48,862	-2%
NM	1999	16,687,043	1999	16,687,043	0	0%
NY	2006	18,890,209	1993	15,982,863	2,907,346	18%
NC	2006	18,595,759	1990	19,277,295	-681,536	-4%
ND	2007	700,236	1995	673,172	27,064	4%
OH	2006	7,920,077	1991	7,855,742	64,335	1%
OK	1993	5,417,846	1993	5,417,846	0	0%
OR	2007	30,226,653	1992			
PA	2006	16,599,561	1989	16,906,146	-306,585	-2%
RI	2006	364,644	1998	393,229	-28,585	-7%
SC	2006	12,894,218	1993	12,643,030	251,188	2%
SD	2007	1,790,223	1995	1,645,150	145,073	9%
TN	2006	13,951,630	1999	14,402,818	-451,188	-3%
TX	2007	12,099,321	1992	11,954,699	144,622	1%
UT	2007	18,221,992	1993	15,714,161	2,507,831	16%
VT	2006	4,570,712	1997	4,617,518	-46,806	-1%
VA	2007	15,724,815	1992	16,025,350	-300,535	-2%
WA	2007	22,354,210	1991			
WV	2006	12,000,741	2000	12,005,976	-5,235	0%
WI	2007	16,407,970	1996	15,962,292	445,678	3%
WY	2000	11,448,356	1984	3,202,372	8,245,984	257%

Charts created by U.S.D.A. Forest Service Forest Inventory and Analysis Mapmaker 3.0 program (http://fia.fs.fed.us/tools-data/other/default.asp).

Table 2. Total forestland acres and number in small diameter by state as determined by U.S.D.A. Forest Service forest inventory data. This chart compares the most recent inventory data to data from one and two decades ago.

State	Year	Total acres	Small diameter	% small diameter	Year	Total acres	Small diameter	% small diameter	Sm. Dia. gained/lost	% change
Total		632,719,290	113,787,980	18%		493,278,712	106,492,859	22%	7,295,121	-4%
AL	2007	22,618,645	6,435,629	28%	2000	22,987,178	10,924,846	48%	-4,489,217	-19%
AK	2007	14,922,255	3,283,903	22%	1998					
AZ	2007	18,711,559	1,551,742	8%	1999	19,426,195	842,819	4%	708,923	4%
AR	2007	18,519,705	3,312,089	18%	1995	18,789,076	4,459,096	24%	-1,147,007	-6%
CA	2007	33,051,950	3,208,054	10%	1994					
CO	2007	22,704,654	3,989,469	18%	1984	8,881,946	904,359	10%	3,085,110	7%
CT	2006	1,746,266	82,492	5%	1998	1,859,227	118,690	6%	-36,198	-2%
DE	2006	365,100	43,045	12%	1999	382,763	54,318	14%	-11,273	-2%
FL	2006	16,718,501	4,976,907	30%	1995	16,222,467	5,436,880	34%	-459,973	-4%
GA	2007	24,896,839	6,627,570	27%	1997	24,414,232	8,261,797	34%	-1,634,227	-7%
ID	2007	21,487,373	3,557,568	17%	1991	17,871,839	2,492,292	14%	1,065,276	3%
IL	2006	4,789,560	332,039	7%	1998	4,330,075	127,935	3%	204,104	4%
IN	2007	4,823,799	393,697	8%	1998	4,502,711	259,067	6%	134,630	2%
IA	2006	2,993,267	413,250	14%	1990	2,053,183	300,576	15%	112,674	-1%
KS	2006	2,103,946	312,958	15%	1994	1,545,317	300,675	19%	12,283	-5%
KY	2006	12,129,787	1,269,785	10%	1988	12,672,873	2,059,135	16%	-789,350	-6%
LA	2005	14,138,135	3,771,053	27%	1991	13,790,938	3,403,829	25%	367,224	2%
ME	2006	17,695,385	5,362,741	30%	1995	17,699,335	4,620,053	26%	742,688	4%
MD	2006	2,437,800	228,875	9%	1999	2,565,048	280,665	11%	-51,790	-2%
MA	2006	3,054,986	118,231	4%	1998	3,126,547	284,433	9%	-166,202	-5%
MI	2007	19,710,192	3,720,860	19%	1993	19,286,757	4,595,542	24%	-874,682	-5%
MN	2007	16,723,532	5,906,409	35%	1990	16,681,068	5,089,141	31%	817,268	5%
MS	2006	19,622,417	5,222,706	27%	1994	18,595,442	6,994,282	38%	-1,771,576	-11%
MO	2006	15,078,279	1,508,952	10%	1989	14,000,274	3,001,322	21%	-1,492,370	-11%
MT	2007	25,589,056	4,808,511	19%	1989	22,385,607	3,549,010	16%	1,259,501	3%
NE	2006	1,317,206	107,748	8%	1994	945,027	106,195	11%	1,553	-3%
NV	2005	11,088,930	719,844	6%	1989	9,940,897	227,781	2%	492,063	4%
NH	2006	4,730,665	519,939	11%	1997	4,823,840	483,815	10%	36,124	1%
NJ	2006	2,083,283	219,830	11%	1999	2,132,145	271,831	13%	-52,001	-2%
NM	1999	16,687,043	1,028,237	6%	1999	16,687,043	1,028,237	6%	0	0%
NY	2006	18,890,209	2,252,683	12%	1993	15,982,863	2,707,054	17%	-454,371	-5%
NC	2006	18,595,759	4,333,238	23%	1990	19,277,295	4,526,142	23%	-192,904	0%
ND	2007	700,236	203,512	29%	1995	673,172	126,522	19%	76,990	10%
OH	2006	7,920,077	1,005,612	13%	1991	7,855,742	1,859,111	24%	-853,499	-11%
OK	1993	5,417,846	1,625,220	30%	1993	5,417,846	1,625,220	30%	0	0%
OR	2007	30,226,653	5,190,436	17%	1992				5,190,436	17%
PA	2006	16,599,561	1,795,527	11%	1989	16,906,146	2,512,670	15%	-717,143	-4%
RI	2006	364,644	22,532	6%	1998	393,229	26,734	7%	-4,202	-1%
SC	2006	12,894,218	3,300,167	26%	1993	12,643,030	4,469,385	35%	-1,169,218	-10%
SD	2007	1,790,223	253,830	14%	1995	1,645,150	357,160	22%	-103,330	-8%
TN	2006	13,951,630	1,812,143	13%	1999	14,402,818	3,243,909	23%	-1,431,766	-10%
TX	2007	12,099,321	3,062,215	25%	1992	11,954,699	3,876,137	32%	-813,922	-7%
UT	2007	18,221,992	2,939,776	16%	1993	15,714,161	1,184,521	8%	1,755,255	9%
VT	2006	4,570,712	474,544	10%	1997	4,617,518	458,918	10%	15,626	0%
VA	2007	15,724,815	2,405,799	15%	1992	16,025,350	3,033,579	19%	-627,780	-4%
WA	2007	22,354,210	3,661,441	16%	1991				3,661,441	16%
WV	2006	12,000,741	847,155	7%	2000	12,005,976	890,009	7%	-42,854	0%
WI	2007	16,407,970	3,492,809	21%	1996	15,962,292	4,842,908	30%	-1,350,099	-9%
WY	2000	11,448,356	2,075,207	18%	1984	3,202,372	274,259	9%	1,800,948	10%

Charts created by U.S.D.A. Forest Service Forest Inventory and Analysis Mapmaker 3.0 program (http://fia.fs.fed.us/tools-data/other/default.asp).

Deer Hunting Safety Trends

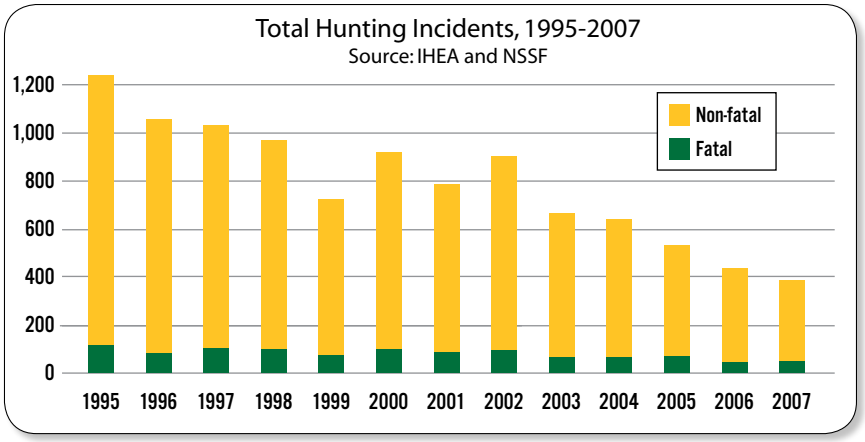
Hunting is one of the safest forms of recreation in the United States, contributing to less than 1 percent of all sports-related injuries nationwide, and ranking below other activities, such as golf, tennis and jogging.

The U.S. Fish and Wildlife Service (USFWS) estimates that 13 million Americans aged 16 or older hunted 228 million days in 2001; yet, even with all of that time spent afield, state wildlife agencies only reported 800 total hunting accidents during the same time period. Of that number, 555 involved two people, 245 were self-inflicted, and less than 10 percent were fatal – resulting in about one death for every 165,000 hunters that year. That means in 2001 hunters were more than eight times as likely to die in a car accident traveling to hunt (1 in 18,585) than they were to be killed in a shooting incident once they arrived.

Increased emphasis on safety instruction and mentoring by state wildlife agencies and conservation organizations has steadily reduced injury rates among hunters.

Quotable QDMA:
"The IHEA has 7.9 percent more hunter education instructors across North America today (63,261) than in 2003 (58,650), yet collectively teach around the same number of students (about 750,000)."

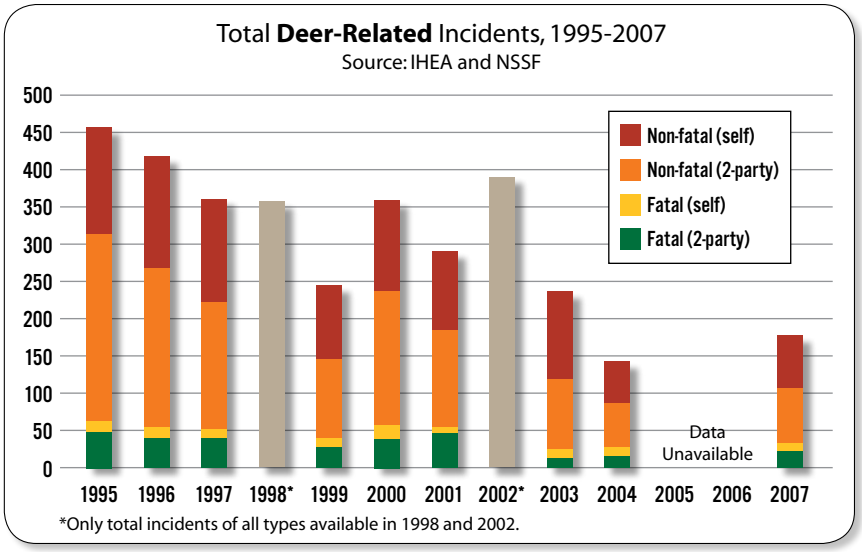
Although, incredibly, the annual percentage of fatal compared to total incidents has remained relatively constant (8.7 to 10.8 percent) since 1995, hunting accidents in general have been declining the past 15 years (refer to the graph on this page).



According to data reported to the International Hunter Education Association (IHEA) hunting incidents decreased 30 percent nationally from 1992 to 2002. Since then, the rate has dropped even more from roughly 900 in 2002 to below an estimated 400 total incidents last year. It's important to note, however, that the IHEA is not a regulatory authority and does not force any state or provincial wildlife jurisdictions to report their accident data, thus it's best to utilize this information to investigate broad trends over time.

Some safety experts credit this most recent precipitous decline in hunting accidents with increasingly focused hunter education efforts the past five to 10 years. The IHEA has 7.9 percent more hunter education instructors across North America today (63,261) than in 2003 (58,650), yet collectively teach around the same number of students (about 750,000). Others argue that stiffer national hunter-orange clothing regulations are responsible. There are currently 10 states out of 50

that don't require blaze-orange clothing (Alaska, Arizona, California, Idaho, New Hampshire, New Mexico, Nevada, New York, Oregon and Vermont); however, South Dakota is the only state that has enlisted new mandatory hunter-orange regulations since 2003, making this the unlikely factor. Regardless of the reason, hunting remains a safe activity for many and records indicate that fewer accidents occur today than in the mid 1990s.



"It's rare for any state to record more than 25 total accidental shootings annually that involve whitetails, even for those with extremely high hunter densities."

With respect to deer hunting, although the number of deer-related hunting accidents recorded annually also appears to be declining, the relative proportion of accidents that occur nationally while hunting deer compared to other game has remained fairly stable (30 to 50 percent) since 1995.

When reported, all incidents are categorized by IHEA into three accident classifications (Class A, B, and C). Class A are hunting accidents that involve a shooting by gun or bow, Class B involve any hunting accident other than shooting (i.e., tree-stand fall, heart attack, etc.) and Class C involve any shooting incident that occurs while not hunting at all (i.e., target range, cleaning a gun, etc.). In regard to Class A hunting incidents specifically involving deer, IHEA estimates that 131 total hunting accidents (19 fatal) occurred nationwide in 2007. This is roughly one accident for every 77,000 deer hunters, and less than one fatality for every half a million deer hunters. This is also down from the 2003 estimate of 183 (22 fatal), and is in-step with the current trend of declining total and other (Class B and C) deer-related hunting accidents over time. In fact, only once since 1995 has there been more than 60 fatal deer hunting accidents recorded in the entire country, regardless of classification, during a single deer season. On average only 10.2 percent of cases involved a second party – not bad with more than 10 million hunters in the woods annually.

With respect to state totals, it's rare for any state to record more than 25 total accidental shootings annually that involve whitetails, even for those with extremely high hunter densities. Specifically, states like Michigan, Pennsylvania, Texas and Wisconsin routinely license between 600,000 to 800,000 deer hunters every fall and have firearm seasons that range from nine to 79 days; yet, each only recorded 21, 13, 7 and 8 total shooting accidents in 2007 that involved deer, respectively.

So, how can we tell if the appearance of unsafe deer hunting conditions has impacted national hunter recruitment or retention? Realistically, in a recent national survey completed by Responsive Management, less than 4 percent of active hunters reported that fear of injury from other hunters had either taken away enjoyment or had influenced their decline in participation. In addition, this percentage has declined markedly since 1995 (9 percent), which is a testament to the decrease in injuries/fatalities reported by IHEA and means that hunters worry less about unsafe conditions while deer hunting today.

References:

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IHEA – 2003 Program Profile
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NSSF 2008 Industry Reference Guide
RM/NSSF Future of Shooting Sports
USFWS – 2001 National Survey of Fishing, Hunting, and Wildlife Associated Recreation
USFWS – 2001 Deer Hunting in the United States

QDM's Impact on Hunting Merchandise

Deer hunters today are incredibly tech-savvy and have an intense desire to learn about their quarry. The modern deer hunter is also far more willing to take an active role in management efforts to improve an individual property and/or success rates. This evolution from the hunting style of yesteryear to an increased level of involvement is largely a result of the Quality Deer Management (QDM) philosophy. It should come as no surprise, then, that as QDM has increased in both popularity and practice during the last two decades, so, too, has the availability and diversity of deer management merchandise and accessories on the market.

Taken in fall 2008, this photo of an aisle in a major hunting retailer reveals the recent, phenomenal growth in trail-camera manufacturing.

The four Cornerstones of QDM specifically address herd management, habitat management, hunter management and herd monitoring. Within each area of this foundation, one can find a variety of tools and techniques to improve the health and dynamics of a deer herd. To fully examine QDM's impact on the availability of hunting products, let's first look within the herd monitoring cornerstone. Trail cameras have become increasingly popular recently, and can be used to scout before or during the season, to index individual deer, and to monitor management efforts over time. In fact, hunters conducting formal camera surveys to gather population data such as sex ratios and buck age structures usually purchase multiple cameras – thus QDM and the rise of the trail-camera industry are undeniably linked. But if we think back, when did this trail camera explosion really begin?

To investigate this, we looked to the deer hunting industry. Grand View Media Group annually publishes 22 outdoor enthusiast and business publications, including three trade sporting directories known as the Black's guides. The Black's Archery & Bowhunting Edition lists a large variety of hunting equipment manufacturers and is distributed each April to retailers, sporting goods stores, select industry and association executives, as well as outdoor writers all across the country. As

Quotable QDMA:

"According to the 2003 Black's Archery & Bowhunting Edition, there were only two companies listed under the category 'Trail Surveillance' that produced game cameras. Five years later, the category had been renamed to 'Trail Surveillance/Cameras' and there were now 25 companies listed. "

"Not only are whitetails the backbone of the entire hunting industry, but QDM is driving unique sectors of manufacturing."

the Archery Trade Association's official guide to the industry, this particular publication is widely considered the industry's desktop reference. According to the 2003 Black's Archery & Bowhunting Edition, there were only two companies listed under the category "Trail Surveillance" that produced game cameras. Five years later, the category had been renamed to "Trail Surveillance/Cameras" and there were now 25 companies listed. Only five of them listed a founding date pre-1990.

Retail giant Bass Pro Shops also annually produces a series of Master Fall catalogs that provide hunting, fishing and camping gear for outdoor enthusiasts. With over 50 destination retail stores across the U.S. and Canada that collectively serve over 75 million sportsmen and women a year, Bass Pro Shops catalog archives are a good indicator of when trail camera availability increased for the everyday consumer. Ten years ago, only two trail camera companies were listed on less than one full page in the Bass Pro Shops 1998 Fall Hunting Specialist catalog, each with only one 35 mm model available. By the 2003 Fall Master catalog, five manufacturers and 13 total trail camera models were listed on three pages, only one of which was digital format. Finally, in last season's 2008 Hunting Master catalog, nine different trail camera companies filled nine pages, offering more than 24 total models of varying prices and options. All of these are digital format, and one model can now wirelessly download images using cellular technology.

Another important aspect of QDM is habitat management. Food plots have also become an essential part of the modern deer hunter's vocabulary and management efforts in the past 20 years. Food plots can serve to both improve year-round nutritional capacity and increase harvest opportunity. Involvement with food plots has drawn many hunters into deeper involvement with QDM, and vice versa. Looking back to the 2003 edition of Black's, there were 23 manufacturer's listed under the category "Game Feeds"; 14 of which produced some type of seed blend intended to grow forage for deer. By the 2007 edition, this category name also changed to "Game Feed & Food Plots" to address the new, more diverse products that were available. The 2008 Black's catalog currently lists 39 total companies in this category, 26 of which produce food plot seeds – an 86 percent increase in food plot seed distributors over the last five years. In 10 years, Bass Pro Shops catalog archives changed from one page of food plot related products in their 1998 catalog to over five pages dedicated to them in 2008.

So what does all this mean for the future of deer hunting? Obviously, it's easy to understand that with more and more deer hunters practicing QDM across the landscape, there will be a higher demand for QDM-related products. Not only are whitetails the backbone of the entire hunting industry, but QDM is driving unique sectors of manufacturing. What is clearly evident is that deer hunters and landowners today feel a sense of empowerment learning about and applying deer management principles, something that was quite uncommon 20 or more years ago. It's also obvious that hunting industry manufacturers are responding to the demand of these newly sought after management products. Important to note that within each respective product category, demand for better and faster technology is driving principle design, so you can also bet that today's technology will soon be trumped with new and better products as time goes by.

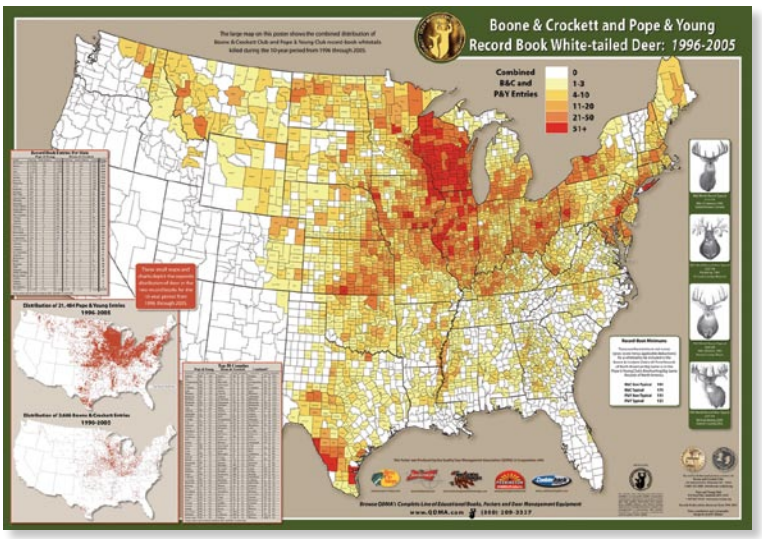
"The 2008 Black's catalog listed 26 companies that produce food plot seeds – an 86 percent increase in food plot seed distributors over the previous five years."

Distribution of Record-Book Bucks

Note: This report was written by Dr. Joel W. Helmer for QDMA's Quality Whitetails magazine.

Over the last 10 years I have spent considerable time researching and writing about the Boone & Crockett (B&C) and Pope & Young (P&Y) Club's record books. I have also had the good fortune of working closely with the QDMA in producing two posters showing the spatial distribution of B&C and P&Y record-book whitetails.

The first was published back in 2001, while the most recent version was made available in 2008. Each poster includes a color-coded map of entries by county, dot maps of B&C and P&Y entries by state, tables showing entries by state and the top 50 counties, and pictures of the current world-record bucks. In this article I discuss how the map of record-book bucks is changing, offer a few reasons for this change, and list what I believe are currently the top 10 areas in the nation for record-book caliber whitetails (refer to the large map at the end of this chapter).



Recently updated, QDMA's 28- by 40-inch wall poster includes the full-size, detailed map of the distribution of Boone & Crockett and Pope & Young records-book bucks from the last 10 years, complete with county names. In addition, the poster includes charts showing the full state-by-state statistics and the Top-50 counties in the nation. Additional maps show the separate distribution of Boone & Crockett and Pope & Young records by location, plus there are photographs of the current typical and non-typical World Record bucks for each club. Media Members can request a review copy of the poster by contacting Randy Bowden, QDMA Director of Marketing (rbowden@qdma.com). Posters are available for $9.95 by calling (800) 209-3337 or visiting the online store at www.QDMA.com.

I tend to think about the distribution of record-book whitetails both spatially and historically. White-tailed deer have an intriguing natural history in North America, a story many hunters are familiar with. From a pre-colonial population of perhaps 15 to 20 million, the population reached its nadir in the early 1900s when only about 500,000 remained, with many states reporting the species extinct.

To rebuild the herd, hunting seasons were suspended, protective buck-only regulations became commonplace, and transplanting operations restocked areas void of deer. With the cooperation and financial support of hunters, these programs were extremely successful, and by the mid-to-late 1980s the focus began shifting increasingly toward QDM: seeking balanced buck-to-doe ratios, balancing deer populations with habitat, and increasing the numbers of buck surviving to maturity. The creation of the QDMA in 1988 attests to this paradigm shift.

With more deer came longer hunting seasons, larger bag limits, and increasing interest in harvesting mature bucks. This led to increasing interest in and promotion of the B&C and P&Y record books. If you want a symbolic starting point for this shift, I suggest the fall of 1993. On November 20, Brian Damery shot a 200 2/8-inch brute in central Illinois that still ranks as the sixth highest scoring typical ever. Only three days later, Milo Hanson tied his tag on a 213 5/8-inch typical from Saskatchewan, Canada, unseating James Jordan's 1914 buck as the new world record.

Quotable QDMA:
"There is no doubt that growing interest in Quality Deer Management, the educational efforts of QDMA and many other groups and deer experts can be seen in the growing numbers of record-book whitetails."

Since the Hanson buck, the number of B&C and P&Y entries accepted has increased steadily every year. Partly due to promotion of the records program and increasing awareness of hunters to records keeping, it is also a testament to more opportunities to harvest mature bucks. Being a recently trained official B&C and P&Y scorer, I can attest to the fact that both organizations are scrambling to train official scorers while handling the increasing volume of score sheets coming into their central offices.

This brings us back to the posters. The older version includes entries from 1991-2000, including a total of 17,619 entries; 15,043 P&Y and 2,576 B&C. Total entries increase substantially on the newer version covering the period 1996-2005. This version includes 25,150 entries; 21,484 P&Y and 3,666 B&C. Not only has the total number increased, but more counties are represented with at least one entry. There is no doubt that growing interest in Quality Deer Management, the educational efforts of QDMA and many other groups and deer experts can be seen in the growing numbers of record-book whitetails.

It does quickly become apparent that certain states and regions are producing more entries than others. The million dollar question I am always asked is: Why are some states so much better than others? There is no pat answer to that question. As most hunters realize, many factors influence the health, nutrition, antler growth, and harvest of mature whitetails. We also realize that QDM practices can produce mature bucks at the local level that necessarily do not "fit" the national pattern.

I do want to relate some unique patterns revealed on the poster. The relationship between entries and river systems is evident throughout the country, especially in heavily farmed states. For example, in Iowa the best counties are not the most heavily farmed, but tend to have a mixture of farmland and forest cover associated with rich soils along river bottoms. Counties bordering the Missouri, Mississippi, and Des Moines rivers account for the majority of entries from Iowa. This pattern is evident in many areas, especially along the Mississippi, Ohio, and Missouri river drainages.

Perhaps the most interesting pattern is the impact different state management practices can have upon entries. This is perhaps most evident between Ohio and West Virginia, Kentucky and Tennessee, and Kansas and Oklahoma. Habitat as you cross these borders does not change drastically, so differences in management may be responsible. One factor may be in the timing of the modern and primitive firearms seasons. The border of southern Kansas and northern Oklahoma provides a good illustration. In Kansas, the modern rifle season takes place after the rut, while in Oklahoma it generally falls during the peak of the rut. Also, the primitive weapons season in Kansas is in mid-September when foliage is dense and temperatures are warm. In contrast, Oklahoma's primitive season is in late October and early November, when temperatures are cool, bucks are entering the rut, and the leaves are falling. Similar circumstances occur between Iowa and Missouri, Ohio and West Virginia, and Nebraska and Kansas.

The good news for deer hunters is that mature bucks can be found throughout the whitetail's range. From the cypress swamps of the Southeast, to the hardwood ridges of Pennsylvania, to the plains of Kansas, to the mountains of Idaho, these maps are also a testament to the adaptability of the species and to the wise management of millions of hunters, wildlife biologists, and practitioners of QDM.

About the Author: *Dr. Joel W. Helmer is a QDMA member and associate professor of geography at Concordia University in Seward, Nebraska, where he is also chair of the Social Science Department. For questions about the distribution map or this article, Dr. Helmer can be reached at (402) 643-7302 or joel.helmer@cune.edu.*

Editor's Note: *The data reflected in the QDMA map includes whitetails taken from 1996 to 2005 meeting either the Pope & Young Club minimum net scores (125 typical; 155 non-typical) or the Boone & Crockett Club's Awards program minimum net scores (160 typical; 185 non-typical). Note: the B&C Awards program minimums are lower than the All-Time records minimum (170 typical; 195 non-typical). The record-book data used to produce this map was provided courtesy of the Boone & Crockett Club (www.boone-crockett.org) and the Pope & Young Club (www.pope-young.org).*

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"The relationship between record-book entries and river systems is evident throughout the country, especially along the Mississippi, Ohio, and Missouri river drainages."

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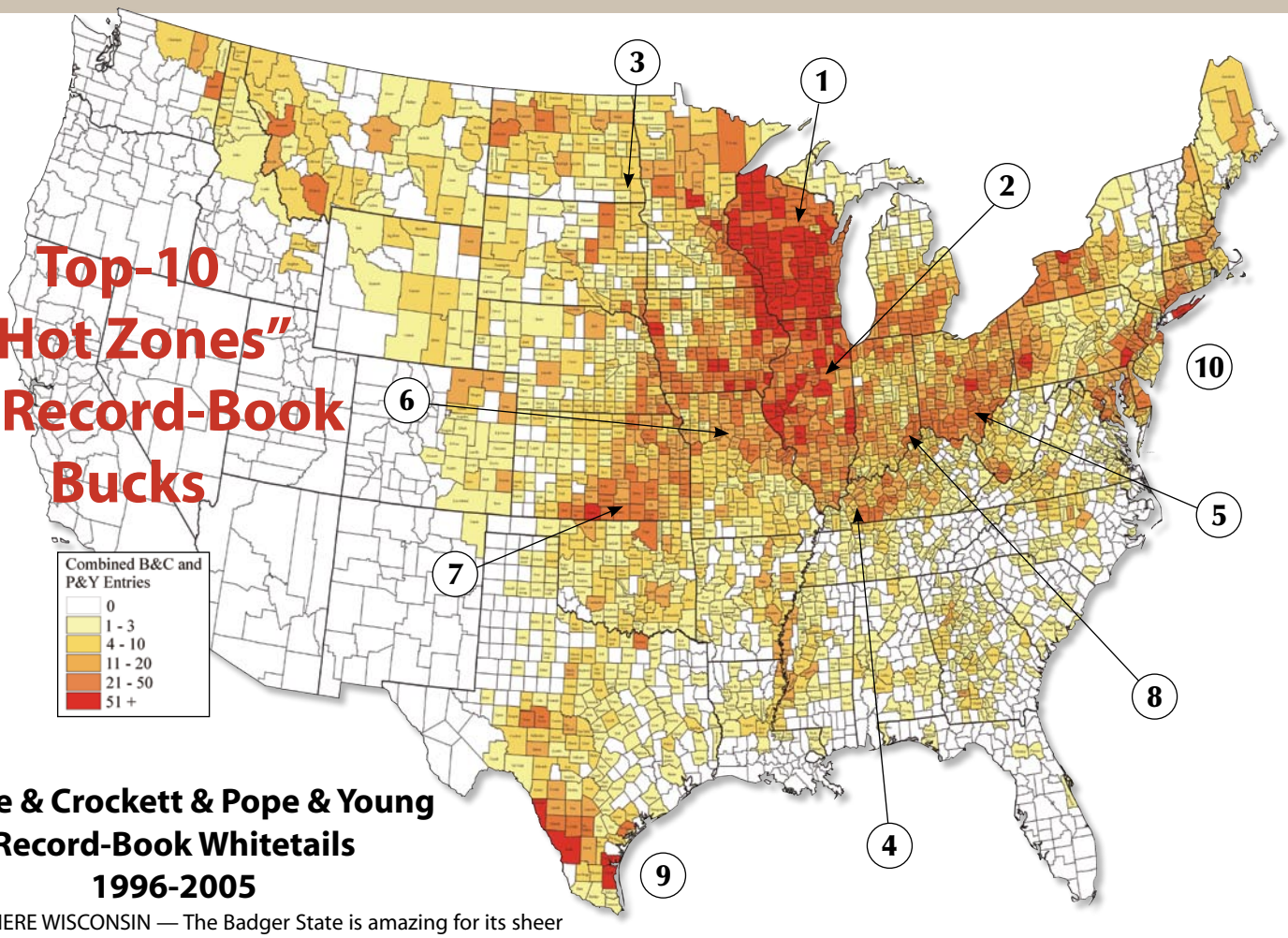
Top-10 "Hot Zones" for Record-Book Bucks



Boone & Crockett & Pope & Young Record-Book Whitetails 1996-2005

1. ANYWHERE WISCONSIN — The Badger State is amazing for its sheer number of entries. Although Illinois has more B&C entries in the 10 years covered on the new poster (540 to Wisconsin's 437), Wisconsin has 4,976 total entries including P&Y entries compared to Illinois' 3,699. It also dominates the top-50 county table, with 26 counties. Whether it's the northern Lake Country, or the southern farmlands, every region of the state has high potential. Buffalo County bordering the Mississippi River in the west-central part of the state claims the title as highest-ranking county in the nation with 520 total entries!

2. ILLINOIS — Illinois is a close second. Although the "Golden Triangle" of west-central counties wedged between the Mississippi and Illinois Rivers and anchored by Pike County is perhaps the best region, a bruiser can saunter toward your stand anywhere in the state. Fourteen of the top-50 counties are located in the Land of Lincoln, with Pike County (371) ranking second in the nation.

3. EASTERN OR SOUTHERN IOWA – The Hawkeye State rounds out the top three, which together account for 11,005 out of 25,150 total entries, or 43 percent. With a large deer herd, excellent habitat, and a gun season well after the rut, Iowa consistently produces big bucks. The southern half of the state containing a more even mix of river bottoms, hardwood ridges, CRP, and agricultural fields is your best bet. That being said, the county with the most entries is Allamakee (123), located in the far northeastern corner of the state along the Mississippi River.

4. WESTERN KENTUCKY – Relatively unknown among whitetail enthusiasts 10 years ago, the Bluegrass State has stormed up the B&C rankings over the last five years. The western portion of the state is generally the best, accounting for most of the state's 726 entries.

5. SOUTHERN OHIO – During my graduate studies, I often dreamt of hunting the rolling hills of southern Ohio. These dreams were well founded, with Ohio hunters entering 1,609 entries over the period, with most coming from the southern half of the state.

6. NORTHERN MISSOURI – Perhaps less well-known as a trophy destination, Missouri gets the slight edge over Kansas for sixth place. Although a few good bucks come from south of the Missouri River, most will be found in the agriculturally rich portion of the state north of the Ozarks. The best counties border Iowa and Illinois in the northeastern end of the state.

7. EASTERN KANSAS – The Sunflower State's reputation as a big-buck paradise is legitimate. With its muzzleloader season in mid-September and a gun season falling after the rut, bucks can reach the age necessary for optimum antler growth. Sitting in a bow stand in eastern Kansas during the rut just might be the best place in the nation to arrow a B&C-class buck.

8. SOUTHERN INDIANA – I believe Indiana is one of the most overlooked states for records-book bucks, perhaps due to its proximity to better-known areas of Illinois and Ohio. The southern half of Indiana is terrific, consistently producing some great bucks.

9. SOUTH TEXAS – The "Brush Country" starting just south of San Antonio down to the King Ranch is still one of the best places for B&C caliber bucks. Hunting this area you are nearly guaranteed to see numerous mature bucks, along with an abundance of other wildlife.

10. EAST COAST SUBURBIA – One pattern that people immediately point to on the map are the rings of high-ranking counties around Washington D.C., New York City, and Philadelphia. Suburban areas often harbor small pockets of habitat allowing bucks to mature with little hunting pressure. Each year savvy bowhunters gain access to these small tracts and harvest some dandy bucks.

The "Modern" Deer Hunter

We've all heard this phrase, but what *is* a "modern deer hunter"? Is it a hunter who wears the most recent camouflage patterns? Is it a hunter who shoots the latest sporting arm or bow? Maybe, but modern hunters also have other attributes. Of all their characteristics however, the most important is that modern hunters are much more knowledgeable about deer biology and management than hunters at any point in our history. Some of our forefathers had exceptional hunting skills, but as a group, today's hunters are in the honor society with respect to deer knowledge.

The modern deer hunter is a passionate, knowledgeable and engaged deer enthusiast who views his/her role as more than just a deer hunter, but rather an enlightened deer manager and a necessary contributor to the future of wildlife management and conservation. Whether you're a QDM advocate or not, all hunters should rejoice in the fact that we're more knowledgeable in our deer hunting and managing endeavors. This fact is not surprising as public surveys indicate deer hunters have slightly higher average education and income levels than the general public. It is logical that this segment of our population is also more knowledgeable about their favorite pastime. This also shows the impression of "slob" hunters that anti-hunters use to portray the average hunter is clearly not accurate.

Modern hunters are interested in being a part of the management process, and state agencies aren't the only ones recognizing this. Scott Bestul's 2007 article in *Deer and Deer Hunting* titled "Equilibrium – can deer doctors and deer hunters find a state of balance?" did an excellent job explaining how the relationship between state wildlife agencies and their respective deer hunters must adapt to current deer management issues and account for hunter knowledge. In a nutshell, Scott stated there was a time when state agencies could dictate policy to hunters without being questioned. However, Scott contends those days are gone forever as more and more hunters understand the principles of deer biology and management and ask their state officials to explain or defend their management recommendations.

Whether you're from a state agency, conservation organization, hunting group or other discipline we need to acknowledge that hunters are the most important piece of the puzzle. They drive the industry by contributing more than $66 billion annually to the U.S. economy and supporting nearly 600,000 jobs. Without hunters, and deer hunters in particular, wildlife conservation and management would cease to exist. We should embrace the fact that the "modern" deer hunter has arrived and thank him/her for their support, commitment and service to the resource. State and federal wildlife agencies should further engage their hunter constituents as partners in the management and decision-making processes.

These hunters were successful graduates of a QDMA Deer Steward certification course, an intensive three-day "boot camp" for whitetail mangers. Today's hunter is far more knowledgeable about deer and habitat management and interested in playing an active role in wildlife policy. Thus, wildlife agencies must view the modern deer hunter as a constituent and partner in wildlife management.

Quotable QDMA:
"State and federal wildlife agencies should further engage their hunter constituents as partners in the management and decision-making processes."

Part Two:

Deer Management Reference and Research

Did You Know?

White-tailed deer are the most-studied big game animal in North America. There are volumes of literature available on whitetails, and hunters are more savvy than ever on information pertaining to their favorite quarry. With all of this information, it may seem that hunters know a whitetail inside and out, and yet research continually adds to our knowledge or changes what we previously believed. Here are some interesting facts about whitetails established by research. Did you know:

- The average adult whitetail consumes one ton of food per year.
- Deer sleep in short bouts, alternating between a doze and full alertness, and they can sleep with their eyes open or closed and with their head up or in a resting position.
- Fawns are not scentless – they have a scent, as that's how their mother recognizes them, and fawns may even rub-urinate when only days old.

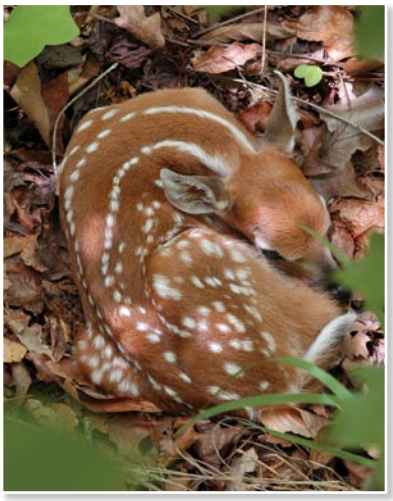
Or how about:

- Approximately 20 to 25 percent of twin fawns have different fathers.
- 50 to 70 percent of bucks disperse 1 to 5 miles from their birth area when they are 12 to 18 months of age.
- During their life, most bucks sire fewer than five fawns that reach 6 months of age.

These twin fawns, a doe and a buck, may not be actual "twins." Research has shown that approximately 20 to 25 percent of twin sets have different fathers.

Regarding does, did you know:

- You can determine the peak of the rut in your area by measuring fetuses from harvested does.
- Does also use scrapes during the breeding season, and they may use them on a regular basis.
- 82 percent of fetal growth occurs during the final trimester of pregnancy. This time frame corresponds perfectly with spring green-up in northern herds.



How are you with numbers? Did you know:

- Fawns average about 300 white spots.
- Except for nursing two to four times a day, a fawn spends the first four weeks of life in hiding, separate from the doe.
- Healthy fawns average 4 to 8 pounds at birth and they will double their weight in two weeks and triple it within a month.
- Healthy fawns can outrun a man when only a few days old but it generally takes three to six weeks before they can elude most predators.

You're more knowledgeable about bucks? Did you know:

- Pheromones deposited at signposts (rubs and scrapes) by mature bucks may have a "bio-stimulating" or trigger effect on the breeding season.
- Older bucks may also produce "controlling" or "priming" pheromones that yearling bucks are not physically mature enough to produce.

Quotable QDMA:
"Approximately 20 to 25 percent of twin fawns have different fathers."

"Does also use scrapes during the breeding season, and they may use them on a regular basis."

- Areas with mature bucks can have 10 times as many rubs as areas without them,
- Mature bucks make about 85 percent more scrapes and 50 percent more rubs than yearling bucks.
- Young bucks can sire up to a third (30 percent) of fawns even in populations where mature bucks comprise over 50 percent of the bucks.

Regarding communication, did you know:

- Bucks of all ages use scrapes, and the same scrape may be used by many individuals.
- Scraping activity peaks just prior to peak of the rut, but active scrapes may be found over several months.
- Most scraping activity (85 percent) occurs at night.
- Scrapes only a few hundred yards apart may be used by completely different groups of bucks, which brings into question the idea of a "scrape line."

Researchers monitoring scrapes have found that bucks of all ages and even does use scrapes. They've also found that 85 percent of scrape use occurs at night.

How is your antler knowledge? Did you know:

- Deer antlers can grow an inch or more per day, making them the fastest normal growing tissue known to man.
- In photoperiod-controlled experiments, deer can grow up to three sets of antlers per year or retain their antlers for more than one year.
- Transplanting material from a buck's pedicle to other skeletal regions results in growth of antler tissue in the transplanted area (such as on the forehead of mice or the leg of a deer).
- Bucks "steal" minerals from their skeleton to harden their antlers in late summer – thus they experience a yearly form of osteoporosis.

How did you do? Did you know all of the above information? If not, don't feel bad as it's nearly impossible to stay abreast of all the literature and research involving whitetails in North America. Fortunately, QDMA recognizes that, and it's one reason we provide this service to our members. Each issue of *Quality Whitetails* magazine contains the latest information on deer biology, ecology, and management, as well as native habitat and food plot management.

Quotable QDMA:

"Scrapes only a few hundred yards apart may be used by completely different groups of bucks, which brings into question the idea of a "scrape line."

"Deer antlers can grow an inch or more per day, making them the fastest normal growing tissue known to man."

Deer Management Strategies

Quality Deer Management (QDM) is a household name to modern day deer hunters. You can't pick up a hunting magazine, watch outdoor television, or talk to the guys at camp without seeing or hearing the letters QDM. The rise in popularity of QDM is a good thing for deer, other wildlife species, habitats and hunters. While today's hunters are more educated than ever before, there are still many who don't fully understand how QDM differs from traditional or trophy deer management. The following information compares and contrasts the three management strategies using seven measurable variables.

Traditional Deer Management

Under traditional deer management, any antlered buck is harvested, regardless of age or antler quality, and few does are harvested. Deer researcher Dr. Grant Woods refers to traditional deer management as "Maximum Buck Harvest Management." This is the strategy that every state in the country used and some continue to use today. This strategy may work when the deer herd is below the habitat's carrying capacity but fails when the herd equals or exceeds the carrying capacity.

Protecting yearling bucks and increasing the number of 2½- and 3½-year-old bucks available for harvest is a realistic and achievable goal for the vast majority of deer hunters. This is one reason QDM is within reach of far more hunters than Trophy Deer Management.

Quality Deer Management

Quality Deer Management is the approach where young bucks are protected from harvest, combined with an adequate harvest of female deer to produce healthy deer herds in balance with existing habitat conditions. QDM is first and foremost about having the biologically appropriate number of deer for the habitat. If a habitat will support 20 deer per square mile, QDM says put 20 deer per square mile on it. If a habitat will support 30 deer per square mile, put 30 deer per square mile on it, but don't put 30 deer on habitat that can only support 20. QDM also improves age structures by allowing bucks to reach all age classes – not just 1½ and 2½ years. QDM accomplishes this by not shooting the majority of yearling bucks each year.

Trophy Deer Management

Trophy Deer Management (TDM) is the approach where only fully mature bucks, 5½ to 7½ years old, with high scoring antlers are harvested (with the exception of cull bucks) and does are aggressively harvested to maintain low deer density and optimum nutrition for the remaining animals. TDM is not practical in much of the United States, and the strategy is negatively viewed by much of the hunting and non-hunting public.

Acreage Requirements
- None for traditional deer management
- Varying acreage requirements for QDM
- 5,000-plus acres for TDM

Quotable QDMA:
"Quality Deer Management is as different from Trophy Deer Management as it is from traditional strategies, even though many hunters and non-hunters incorrectly consider QDM and TDM to be one in the same."

Buck Harvest
- Shoot mostly young bucks in traditional deer management
- Shoot mainly 2½- to 4½-year-old bucks in QDM
- Shoot fully mature (5½ to 7½ years old) in TDM

Doe Harvest
- Shoot few if any in traditional deer management
- Shoot an adequate number in QDM
- Shoot high number in TDM

Adult Sex Ratio
- Generally heavily skewed toward does under traditional deer management
- More balanced ratios in QDM, though still favoring does
- Nearly equal ratios in TDM

Deer vs. Habitat
- Deer herd often greater than habitat's carrying capacity in traditional management
- Deer herd in balance with habitat's carrying capacity in QDM
- Deer herd often less than habitat's carrying capacity in TDM

Influence on Habitat
- Moderate to severe habitat damage in traditional deer management
- Minimal habitat impact in QDM
- Minimal habitat impact in TDM

Deer-Human Conflicts
- high deer-human conflicts in traditional deer management
- reduced deer-human conflicts in QDM
- low deer-human conflicts in TDM

The seven items above show how the different management strategies affect our deer herds and habitats. Each strategy is unique and shouldn't be confused with the others. For example, QDM is as different from TDM as it is from traditional strategies, even though many hunters and non-hunters incorrectly consider QDM and TDM to be one in the same. Each strategy has its place in deer management, but evaluation of the deer herd and habitat is necessary to correctly choose the strategy that will be most effective at producing a healthy deer herd and healthy habitat. Traditional deer management works when the deer population is below the habitat's carrying capacity, and the goal is to increase the deer herd and provide recreational hunting. TDM works best when the goal is to produce mature, trophy-class bucks with high scoring antlers. QDM works best when the deer population is at or exceeding the habitat's carrying capacity and the goal is to improve the health of the deer herd and balance it with available habitat. Fortunately, QDM also provides tremendous hunting opportunities, and unlike TDM, is a realistic goal for most hunters.

The Four Cornerstones of QDM

HERD MANAGEMENT
HABITAT MANAGEMENT
HUNTER MANAGEMENT
HERD MONITORING

Most hunters know that QDM involves passing young bucks. However, fewer know that any successful QDM program is built on four "Cornerstones," with buck management being only one small piece of the puzzle.

Quotable QDMA:
"QDM works best when the deer population is at or exceeding the habitat's carrying capacity, and the goal is to improve the health of the deer herd and balance it with available habitat."

Antlerless Deer Harvest

A deer management program's success can be measured by many factors, but one of the most important is whether the deer herd is in balance with the carrying capacity of the habitat. Is the habitat regenerating naturally? Are all species and age classes of trees represented in the forest? If the answer to these questions is "No" then the deer herd is most likely above the carrying capacity of the habitat and should be reduced.

In a QDM program, there are four important reasons for harvesting antlerless deer.

1) To Control Population Growth and Density. Does are the reproductive segment of the deer herd, and the only way to maintain stability or reduce a deer herd is to harvest female deer. We have removed the major predators of deer (e.g., wolves, mountain lions) from most of the whitetail's range so we, the hunter, must assume that role.

2) To Balance the Sex Ratio. We want adult sex ratios to be as close to 1:1 as possible. In wild populations it is extremely difficult (if not impossible) to get a 1:1 ratio, but well-managed herds can have less than two adult does per adult buck. If we shoot more bucks than does, the adult sex ratio becomes skewed, and skewed ratios lead to poor breeding ecology within the deer herd and lower quality hunting experiences for sportsmen.

3) To Make Room for Yearling Bucks. One goal of QDM is to improve the age structure of the buck segment of a population. A herd should have bucks in all age classes, not just the younger classes. Not harvesting yearling bucks is the best way to increase the number of bucks in a population. On areas that have the right number or too many deer for the habitat, if you save yearling bucks (and you should) you need to shoot additional does to compensate for the additional bucks on the area.

4) To Improve Reproductive Success and Fawn Recruitment. You want the deer herd to be as healthy as possible because does at their reproductive maximum produce the most fawns. You can put the most bucks on a property by having a healthy deer herd. The old adage, "If you shoot a doe you're killing next year's buck" is not true in any deer herd that is above the carrying capacity of the habitat.

The point is simple, if you don't shoot enough does, the deer herd will grow above the habitat's carrying capacity – which is bad for the habitat. Deer herds above carrying capacity don't get enough high-quality nutrition, and their body condition suffers – which is bad for the deer.

Ballpark Doe Harvest

Until you determine the number of adult does on a property using a camera survey or other method, use these ballpark ranges to *stabilize* a deer population. Higher harvest rates will reduce a population. Lower rates will allow population growth.

Poor or Low-Quality Habitats:
One adult doe for every 300 to 640-plus acres.

Moderate-Quality Habitats:
One adult doe for every 100 to 300 acres.

High-Quality Habitats:
One adult doe for every 25 to 100 acres.

Quotable QDMA:
"In a QDM program, there are four important reasons for harvesting antlerless deer: to control population growth, to balance the sex ratio, to make room for yearling bucks, and to improve reproductive success and recruitment."

What is Carrying Capacity?

"Carrying capacity" is an often-used concept in deer management discussions. Biologists, managers and hunters routinely refer to the "carrying capacity" of an area, or whether a deer herd is above or below this magical point. Actually, what does carrying capacity mean?

Carrying capacity is the maximum number of individuals or inhabitants that an environment can support without detrimental effects. Deer populations can and do exceed the carrying capacity on a regular basis. In doing so, they sacrifice their own health as well as damage the vegetation and harm other wildlife species. One reason for the rise in popularity of Quality Deer Management was enough biologists, managers and hunters were fed up with deer herds exhibiting poor health because they were allowed to increase to levels approaching or surpassing an area's carrying capacity. QDMA encourages all deer hunters to manage deer populations at densities lower than this so they are in balance with their habitats. Determining whether a population is below, at, or above carrying capacity, and how to achieve or maintain balance, can be easier said than done.

Biological Carrying Capacity

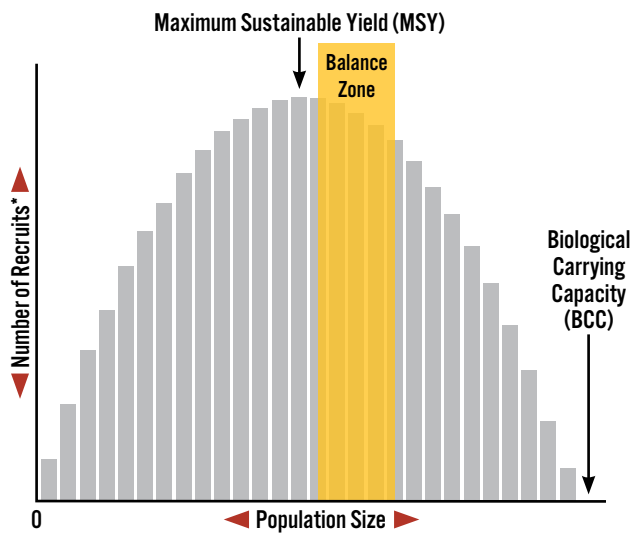
To understand how carrying capacity should play into a QDM program, let's start by separating the term into its most common uses. Biological carrying capacity (BCC) is largely determined by the quality and quantity of available habitat. The BCC is the number of deer a given parcel can support in good physical condition over an extended period of time without adversely impacting the habitat. Unfortunately, deer reproductive rates allow populations to exceed BCC unless the number of fawns recruited is balanced by mortality. (Note: A fawn is "recruited" when it survives to about 6 months of age and enters the fall deer population).

Cultural Carrying Capacity

Cultural carrying capacity (CCC) is defined as the maximum number of deer that can coexist compatibly with local human populations. According to Mark Ellingwood, wildlife program supervisor for the New Hampshire Fish & Game Department who coined the term, an area's CCC is determined by the values of the people living there. The CCC can be higher or lower than BCC since some people have high tolerances for deer and deer-related issues while others do not. The CCC becomes especially important in suburban deer management and in many agricultural regions.

Maximum Sustainable Yield

The chart on this page depicts the normal growth curve of a deer population. Starting with a low density, the population grows rapidly because there are sufficient resources for the herd, so fawn recruitment is high. This growth continues until the population reaches a density that is approximately half of BCC. This point is referred to as the maximum sustainable yield (MSY), and this is where fawn recruitment is maximized. Therefore, this is the point where the maximum number of bucks is brought into the population. When the population grows above this density, resources are less abundant for each deer, so the number of fawns recruited



A "recruit" is defined as a fawn that survives to 6 months of age and becomes part of the fall deer population.

Quotable QDMA:

"Carrying capacity is a measure of the number of deer an area can support, both biologically and culturally, and its value changes annually, seasonally and across properties."

into the population declines. This is why fewer, healthier does can produce and recruit more fawns (and thus more bucks). This is also why the old adages, "When you kill a doe you're really killing three deer" or "When you kill a doe you're killing next year's buck" are rarely true.

You can harvest more deer on a sustained basis when a population is at MSY than at any other density. You likely aren't seeing as many deer as if the population was at BCC, but the population is much healthier and you're able to harvest a far higher number year after year. However, populations are unstable at MSY, and even slight overharvests reduce the number of recruits and the population. It's much wiser to be just to the right of MSY. In this part of the growth curve, populations are stable, and slight overharvests actually increase fawn recruitment.

Balance Zone

A main goal of QDM is to balance a deer herd with its habitat. Where does this point occur on the chart? It's actually not a single point. Rather, it is a zone, and it occurs just to the right of MSY.

Where is the deer herd that you hunt in relation to this zone on the figure? You determine this by collecting some habitat, observation and harvest data. Do you have a visible browse line? If so, you're way past where you want to be. Take a walk in the woods and observe whether the understory is regenerating. Next, determine if there are preferred tree species in that understory versus non-preferred species. These assessments help you gauge where you are on the figure.

Combine your habitat assessment with observation data collected from the archery and/or firearms seasons and harvest data collected from every deer harvested or found dead on the property. By recording the number of does and fawns observed, you can estimate whether the number of recruits is increasing or decreasing. Combine this with harvest data such as weight and lactation status and you can determine whether the overall health of the herd is increasing or decreasing.

The goal isn't to find the exact spot on the figure where a deer herd lies. Rather, initially it is to estimate whether it is to the left or right of MSY. If you like to see deer, shoot a lot, and don't want to sacrifice herd or habitat health, then you should move the population toward the left side of the balance zone. If you like to see a lot of deer but not shoot as many, and are willing to sacrifice some herd and habitat health, then you can allow the population to move toward the right side of the balance zone. A word of caution if you choose the latter: Keep a close eye on habitat and herd health indicators. Once habitat damage becomes severe, recovery takes time and may only be possible if you reduce the deer population below MSY.

Many QDM practitioners are interested in increasing the quality of the habitat they hunt. This is a great way to also increase the carrying capacity of an area. In low-productivity habitats, a deer herd in the balance zone may be too low to provide acceptable hunting experiences. In these cases, the best alternative is to improve the habitat. Depending on habitat type this can be accomplished through timber harvesting, tree and shrub planting, prescribed burning, applying herbicides, disking, roller chopping, or fertilizing. Then the area can be supplemented with high-quality food plots. An area with increased food and cover can support more deer and is definitely more attractive to whitetails.

The Take-Home Message

Carrying capacity is a measure of the number of deer an area can support, both biologically and culturally, and its value changes annually, seasonally and across properties. This is one reason some hunters observe many deer while others a mile or so away can see few or none. Rather than trying to determine the exact carrying capacity of the land you hunt, it's much simpler to manage a deer herd to be in balance with the habitat. You do so by monitoring the health of the herd and its habitat, and determining where that specific herd is in relation to the balance zone. This is a simple procedure that requires a few years of habitat, observation and harvest data. The costs are certainly worth the benefits, as a herd managed at this level provides healthy deer, healthy habitats and tremendous hunting opportunities.

Protecting Yearling Bucks

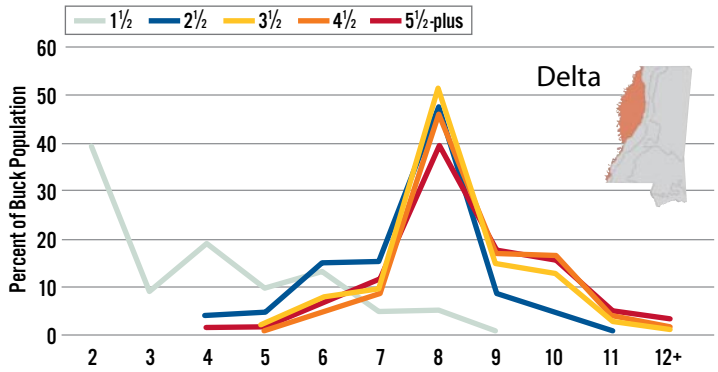
Many hunters unfamiliar with Quality Deer Management (QDM) incorrectly assume QDM is only about large-antlered bucks. Many also feel antler point restrictions (APRs) are synonymous with QDM. QDM is about much more than just antlers or APRs.

In simplest terms QDM involves balancing the deer herd with the habitat and having deer – bucks and does – in multiple age classes. Most areas have a good age structure for the doe population, as it is common for hunters to harvest does 1½ to 6½ years old and older. This age structure exists because of traditional deer management practices where hunters focused much of their harvest pressure on bucks and allowed does to survive and fill multiple age classes.

Very few places have this same age structure for the buck population. Typical buck populations include a high percentage (40 to 60 percent) of yearlings, a small percentage (20 to 30 percent) of 2½-year-olds, an even smaller percentage (5 to 10 percent) of 3½-year-olds, and almost no bucks 4½ years old or older. This young age structure is a direct result of harvest pressure by hunters. In the not-too-distant past most hunters focused intense pressure on yearling bucks and removed the majority of that age class. In historical Pennsylvania for example, hunters routinely removed over 80 percent of the yearling age class on an annual basis. With that removal rate, less than 1 percent of Pennsylvania's bucks ever reached maturity.

QDM helps correct this imbalance by protecting young bucks and allowing them to survive into the older age classes. QDM isn't about protecting bucks until they are 5½ years old – that's Trophy Deer Management. QDM, in simplest terms, is about protecting yearling bucks. Yearling bucks are the easiest adult deer to harvest, but if hunters allow them to reach 2½ years, they become a little smarter, and some will reach 3½ years. Some of those will then avoid hunters and reach 4½ years, etc. Pretty soon you end up with a deer population that has bucks in multiple age classes even while allowing bucks 2½ years old and older to be harvested. A complete age structure is good for deer and great for hunters.

There are several techniques to protect yearlings, and they all have advantages and disadvantages. Antler point restrictions are a common technique, and they involve establishing a minimum number of points a buck must possess to be eligible for harvest. This minimum number should be established with the aid of a biologist and with local harvest data. Advantages of APRs include they are simple and are easy for state agencies to enforce. The disadvantage of APRs is the number of antler points is a poor predictor of animal age (see the chart at right). Yearling bucks can have a rack



This chart based on research by Mississippi State University reveals the danger of using antler points as the criteria for selecting bucks for harvest. Data from Mississippi's high-quality Delta soils region shows that a significant percentage of yearling bucks are 6-pointers or better. It also reveals a great deal of overlap among the older age classes in antler points. In short, the number of antler points on a buck is a poor indicator of age.

Quotable QDMA:

"Yearling bucks are the easiest adult deer to harvest, but if hunters pass them and allow them to reach 2½ years, they become a little smarter, and some will avoid hunters and reach 3½ years."

ranging from short spikes to 10-plus points. Therefore it can be difficult with APRs to protect the majority of the yearling age class while still making other age classes available for harvest. Managers may unintentionally focus harvest pressure on yearlings with larger racks or protect older age classes. However, because of the simplicity and enforceability of APRs, they are the most common buck harvest restriction discussed and implemented by state agencies.

Antler width restrictions are another technique, and they involve establishing a minimum width of antler spread a buck must possess to be eligible for harvest. Again, this width should be established with the aid of a biologist and from local harvest data. The premise of a width restriction is few yearling bucks attain an outside antler spread of more than 15 to 16 inches. Hunters can estimate a buck's antler spread by viewing where the antlers are in relation to an animal's forward pointed ears. Ear-tip-to-tip distance is approximately 15-16 inches for northern deer and slightly less for southern deer. Therefore, if a buck's antlers are as wide as or wider than his ears, there is a good chance he is at least 2½ years. The advantage of a width restriction is it is a much better predictor of whether a buck is 1½ or 2½ years old or older and therefore can do a better job protecting yearlings. Disadvantages of a width restriction include it is slightly more difficult than with an APR to determine the legal status of a buck in the wild, it can be more difficult for state agencies to enforce, and some mature bucks can have tall, narrow racks that are less than 16 inches wide. A width restriction is more biologically sound than an APR and therefore is commonly used on private lands where managers have more control over the deer management program.

A third technique is age restrictions based on body characteristics. This technique involves establishing the age classes available for harvest (2½ years or older for this discussion), and hunters then use body – not antler – characteristics to determine eligible bucks. Distinguishable body changes occur as deer progress through age classes, and this technique requires hunters to be skilled in identifying those changes. The advantage of this technique is it is an excellent predictor of animal age and therefore you can either target or protect multiple age classes of bucks. The disadvantage of this technique is it requires time and practice for hunters to learn the body characteristics of each age class and be able to accurately estimate the age of live bucks in the wild. Age restrictions are by far the most biologically sound approach and are therefore used for the majority of intensive management programs. Due to the skill involved and practice required by hunters, this approach is rarely discussed by state agencies.

Two final techniques are "earn-a-buck" programs and buck harvest quotas. Both approaches restrict the number of bucks harvested rather than the age of bucks harvested. Earn-a-buck programs are typically used in areas of high deer density where managers must force hunters to remove additional antlerless deer. The premise of this technique is a hunter must harvest an antlerless deer to receive (or validate) his/her buck tag. A hunter who doesn't help the management program by harvesting a doe is not permitted to shoot a buck. This technique protects some bucks because not all hunters will have the opportunity to harvest a buck after harvesting an antlerless deer. Buck harvest quotas are similar to what most states currently use to limit the antlerless harvest. With this technique, managers issue a limited number of buck tags and thus some bucks are protected because not all hunters receive a tag.

There are many ways to protect numbers or specific age classes of bucks. No technique is perfect, but they all have advantages. The challenge is to educate hunters on the benefits and limitations of each and achieve broad-based support for the selected technique. Hunter support is crucial. In general, the most biologically sound techniques provide the most benefits, but all of the techniques can improve a deer management program when applied correctly.

Mature Bucks: Who Needs 'Em?

For decades in the late 1900s states such as Alabama, Michigan, Pennsylvania and others managed deer herds in such a manner that the majority of bucks harvested were 1½ years old and very few bucks ever reached maturity. In Pennsylvania, less than 1 percent of bucks reached maturity prior to implementation of antler restrictions in 2002. Even in the absence of mature bucks, does will still breed and most northern does will even breed during their first estrous cycle. Does this mean there is no biological benefit to having mature bucks in a herd? Does it mean there is no biological harm in not having them?

The importance of mature bucks extends far beyond being the most sought-after targets during hunting season. To understand why, let's first define maturity and then look at the role mature bucks play in a deer herd.

Whitetail bucks generally reach skeletal maturity from 4½ to 6½ years and grow their largest set of antlers from 5½ to 7½ years. Most biologists refer to bucks 1½ to 2½ as young or immature, 3½ to 4½ as middle-aged, and 5½ or older as mature. For this article, let's combine middle-aged and mature bucks and consider 3½ years old or older as mature.

Photo by Tes Randle Jolly (www.jollysoutdoorvisions.com)

Pheromones left by mature bucks at rubs and scrapes may play a "priming" role in the timing and length of the rut. More mature bucks means more rubs and scrapes in the woods, which also increases hunting enjoyment.

Quotable QDMA:
"When a balanced buck age structure is achieved, it ensures the behavioral and biological mechanisms that shape deer populations are allowed to function."

Mature bucks are awesome creatures. Even dyed-in-the-wool meat hunters relish the opportunity to shoot a mature whitetail. And why not? Mature bucks are rare in many areas and it's difficult to make them available to hunters. Producing them requires knowledge, skill and time, and harvesting them is usually more difficult. Just as big fish and big trees indicate successful fishery and forestry programs, the presence of mature bucks is a positive sign for a deer management program.

Priming the Rut

Whitetails are social animals, and scent is their primary communication method. During the breeding season signposts such as rubs and scrapes provide the location for scent marking and information sharing. A growing body of research suggests pheromones (chemicals secreted from an animal's body that affect other animals) are deposited at these signposts by mature bucks, and these pheromones may have a "bio-stimulating" or trigger effect on the breeding season.

Research also suggests that older bucks produce "controlling" or "priming" pheromones that yearling bucks are not physically mature enough to produce. Some studies even suggest a buck reaching dominant status produce greater amounts of pheromones than less dominant bucks of the same age, and increased stimulation of does by mature bucks through signposts may cause earlier and more synchronized breeding. While there isn't definitive proof that priming pheromones exist in whitetails, retired researcher Louis Verme and his colleagues found that does penned with bucks experienced estrous earlier than those that were not.

As most hunters know, rubs and scrapes play central roles in deer social life immediately before and during the rut. The relative abundance of rubs and scrapes on a given area is directly related to the density of mature bucks, and areas with mature bucks can have 10 times as many rubs as areas without them. Noted researchers John Ozoga and Louis Verme found yearling bucks lacked the scent-marking behaviors characteristic of mature bucks. In their study, mature bucks began making scrapes two months before any doe bred, whereas yearling bucks made only 15 percent as many scrapes and none until one week before the first doe bred. They also noted yearling bucks made only 50 percent as many rubs as mature bucks during the breeding season.

Signpost behaviors are important to the whitetail's breeding ecology, and therefore the "priming" effect that mature bucks may have on the length and/or timing of the rut is reduced or absent when mature bucks are scarce.

Photo by Hardy Jackson (www.hardyjackson.net)

When mature bucks are absent, young bucks participate more strenuously in rut activities. This drains resources that could have been invested in reaching physical maturity more quickly.

Young Buck Health and Fitness

The priming effect from signposts likely has a stronger effect in southern latitudes as northern studies show the majority of does are bred during their first cycle even in the absence of mature bucks. However, this doesn't discount the benefit of mature bucks to northern herds. Research shows young bucks engage in breeding and may sire nearly a third (30 percent) of fawns even in populations where mature bucks comprise over 50 percent of the bucks. Of course young bucks sire a higher percentage of fawns in populations with fewer mature bucks. However, this is unfortunate because it is advantageous for yearling bucks to spend less time chasing and/or breeding does and additional time feeding and storing fat for the upcoming winter. Yearling bucks that enter winter in better physical condition have higher winter survival rates and are able to contribute more spring forage to body growth and less to recovering the additional body weight lost during winter. Young bucks can handle the breeding requirements of a herd but they do so at their own

Quotable QDMA:

"More mature bucks equals more rubs and scrapes for hunters to find. Hunters witness behaviors like sparring and chasing more often, and hunters are more likely to hear vocalizations like grunting. Success rates with rattling and calling are higher. Even hunting for shed antlers in the off-season is more productive."

nutritional expense. Therefore, the presence of mature bucks suppresses the breeding activities of young bucks. This is good for the future health and growth of these young bucks and the health of the entire deer population.

Breeding Dates and Timing of the Fawn Drop

Abundant research shows skewed adult sex ratios combined with young buck age structures often result in does not being bred until their second or third estrous cycles. Second and third-cycle fawns are born one to two months later than fawns from does bred on time, and these fawns begin life at a distinct disadvantage. Habitat quality is reduced by the time they're born, they have less time to grow before the onset of winter, and predation rates are often higher because you lose the "saturation effect" of having abundant prey on the ground at the same time.

In northern populations young bucks breed the majority of does during their first cycle, but southern populations aren't as fortunate. Having mature bucks in the population helps ensure the vast majority of southern does are bred during their first estrous cycle, bringing about the benefits of an earlier, shorter fawning period.

"Natural" Deer Populations

Mature bucks are part of a "natural" deer herd. Archaeologists determined historic deer populations had an advanced age structure. We assume that Native American hunter-gatherers harvested the first deer available, regardless of its age or sex, and thus their harvest was a relatively random sample of the population. Examinations of deer remains in Native American middens (trash piles) suggests many deer survived to older ages (20 to 26 percent of populations were 5 years or older). Interestingly, data from modern-day unhunted herds show similar age structures. Unfortunately, most modern-day hunted herds have this age structure for does but few do for bucks, a result of harvests made up largely of yearling bucks. However, according to Dr. Dave Guynn from Clemson University, when a balanced age structure is achieved it ensures the behavioral and biological mechanisms that shape deer populations are allowed to function. Dave continues that the density, sex ratio and age structure of a deer herd should mimic a population regulated by natural predators and hunting by Native Americans. This natural condition provides for a nutritionally and socially healthy herd, and it is only achieved when mature bucks are present.

Priming Hunter Enthusiasm

In addition to the biological benefits, mature bucks also provide additional recreational opportunities for hunters. Sightings or trail-camera photos of a mature buck can help motivate more hunters and keep them afield longer. When you are trying to achieve doe harvest goals, recruit help for habitat management efforts, or simply gather attentive club members for an educational program on QDM topics, increased interest works in your favor.

Finally, the enjoyment level of hunting is often directly proportional to mature buck numbers. More mature bucks equals more rubs and scrapes for hunters to find. Hunters witness behaviors like sparring and chasing more often, and hunters are more likely to hear vocalizations like grunting. Success rates with rattling and calling are higher. Even hunting for shed antlers in the off-season is more productive. All of these factors increase enthusiasm for hunting and year-round QDM efforts.

So, can deer herds exist without mature bucks? Sure they can, but remember:

- Whitetail populations evolved with mature bucks.
- Their social order works best with mature bucks.
- Young bucks' fitness can be enhanced by the presence of mature bucks.
- Hunting interest increases when mature bucks are present.

All of these points are good for the deer herd, for deer management and for the future of hunting. The next time you pass a young buck, know that you did your part to improve the health of the deer herd as well as increase your chance of taking a mature buck in the future.

Habitat Management

As hunters develop a more complete understanding of QDM, the importance of habitat quality takes a larger role. Of QDM's four Cornerstones, herd management is often the first that hunters gravitate to, but habitat management quickly grabs the attention of many QDM practitioners and is often one of the most satisfying aspects of a deer management program.

Quality habitat is important for bucks and does in all age classes. Does need nutritious forage to raise healthy fawns, bucks need it for large bodies and antlers, and both sexes require adequate cover to escape predation. Given the average deer eats 2,000 pounds of vegetation annually, it's easy to see a tremendous amount of forage is necessary to support even a low-density deer herd. Larger herds and herds managed to maximize body and antler growth and reproductive capacity require even more high-quality foods.

Early successional stands may produce 1,000 to 2,000 pounds of browse per acre, and they also provide the low ground cover necessary to protect fawns from predation and provide adults with secure bedding sites. For these reasons, a mix of forest age classes is important.

This information separates habitat management into three general categories – forests, old fields and food plots. Forests include areas dominated by woody vegetation and include scrub and shrub habitats. Old fields include areas dominated by grasses, legumes and forbs. These areas are in early successional stages and can include some small woody species. Food plots are areas in agricultural-type plantings. Natural vegetation management includes forests and old fields, and should be the focus of your habitat management efforts. Food plots should be used to supplement the natural vegetation.

Forest Management

Forests dominate the landscape in much of the whitetail's range. These wooded habitats provide food and cover and should include a diversity of stand types and age classes interspersed across the landscape. This diversity of stand structure helps provide year-round forage and cover and is especially important at the geographic limits of the whitetail's range. For example, insufficient winter cover from spruce/fir/hemlock stands in northern New England can preclude deer herd growth even if adequate spring, summer and fall habitats exist. Young stands are important from a forage and cover perspective. Mature forests are important for thermal cover and mast production, but they only produce an average of 50 to 100 pounds of browse per acre. Early successional stands may produce 1,000 to 2,000 pounds of browse per acre, and they also provide the low ground cover necessary to protect fawns from predation and provide adults with secure bedding sites. For these reasons, a mix of age classes is important.

Quotable QDMA:

"Given the average deer eats 2,000 pounds of vegetation annually, it's easy to see a tremendous amount of forage is necessary to support even a low-density deer herd."

Proper forest management may be achieved by techniques ranging from timber harvesting to prescribed burning to quality vegetation management (QVM). QVM is a popular southern forestry technique that involves spraying an herbicide to control undesirable hardwood brush, and conducting a controlled burn to remove dead vegetation and encourage new growth. Research has demonstrated QVM can dramatically improve habitat quality for whitetails.

Structure within the forest is also important. Tops from felled trees and brush piles provide security for whitetails, nest and den locations for other animals, and they can also protect seedlings from being browsed. Open park-like understories may look "clean," but they offer little for deer and other wildlife species. If you can see 50 to 100 yards in the woods, or if the woods are easy to walk through, then the understory layer is too open and deer would benefit from additional low-lying structure.

"Open park-like understories may look 'clean,' but they offer little for deer and other wildlife species. If you can see 50 to 100 yards in the woods, then the understory layer is too open and deer would benefit from additional low-lying structure."

In regions where it is practical, prescribed burning can be an extremely cost-efficent method for quickly improving the quality of deer habitat and maintaining early successional areas. Always check with your state forestry agency for guidelines, permits, and free assistance.

Old Fields

"Old fields" provide food and cover and should represent a minimum of 1 to 5 percent of a property. Some areas in the Midwest and Plains states are dominated by old fields, but many areas in the whitetail's range lack an adequate amount of this habitat type. Proper management of old fields ensures abundant food from legumes and forbs, and native warm-season grasses (NWSG) provide excellent escape, bedding, thermal and fawning cover. NWSG have been popular in the Midwest for many years and are being used at an increasing rate in the Northeast and other regions.

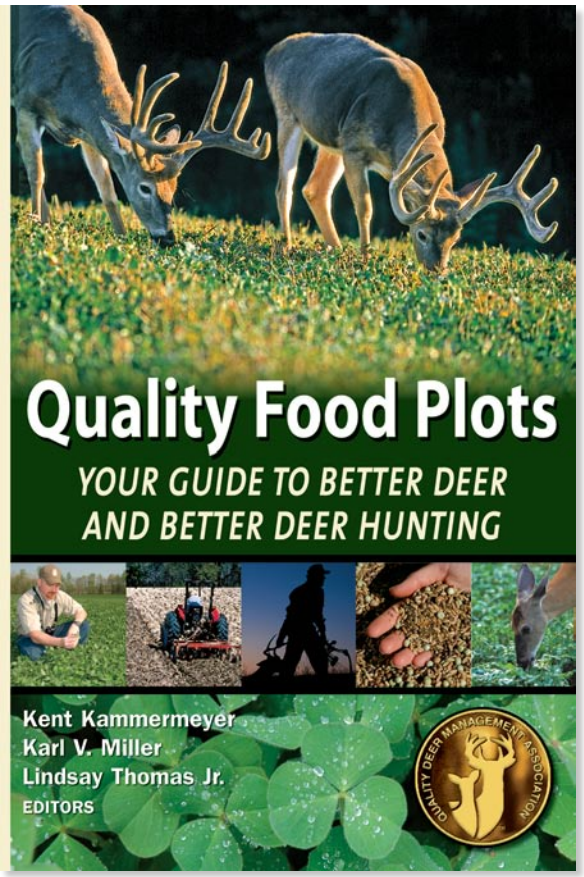
Old fields can be maintained by prescribed burning, disking, mowing, crushing with a roller chopper or bulldozer, fertilizing, applying herbicides, and/or a combination of these techniques. The preferred technique(s) will be dictated by your location. For example, prescribed burning is a valuable tool used throughout the Southeast but used infrequently in the Northeast due to forest composition, liability and smoke management concerns.

Food Plots

Food plots provide food, and species such as corn also provide excellent cover. Research has demonstrated measurable improvements in body weight and other physical parameters when 1 percent of an area is planted in high-quality food plots. The QDMA recommends planting 3 to 5 percent of an area to ensure abundant forage and guard against poor weather, insects or other losses. The goal for a food plot program should be to provide year-round nutrition. There are many planting options, but a good rule of thumb is to plant 60 percent of your food plot acreage in cool-season perennials (clover mixes), 20 percent in cool-season annuals (brassicas), and 20 percent in warm-season annuals (corn, soybeans, etc.). You can alter these percentages as necessary based on your location. For example, Southern managers generally plant a little heavier percentage of warm-sea-

son annuals than in other regions. If you run short on summer food, plant additional warm-season annuals. If you need more winter forage, plant more brassicas and/or corn.

Regardless of plant type, you should distribute food plots across the landscape. Plots typically range from ¼ to 5 acres, and long irregularly-shaped plots maximize the amount of edge habitat. If you have cool-season plots larger than 5 acres, divide them into multiple plots and select plant species to maximize seasonal use by deer. Warm-season plots tend to be larger as it is common for deer to destroy small corn, soybean or cowpea plots before they become established. Agricultural fields, abandoned fields, log landings and logging roads can all be productive food plot sites. You may even choose to "carve" food plots into previously forested areas. Such work can be expensive and labor intensive, but exact location and design can be specified to have the plot double as a strategic hunting location. This can be especially important when trying to harvest mature bucks. Once you've chosen your sites, prepared and amended the soil, selected seed varieties and planted the plots, what do you do next? Pray for rain! You can do everything right and your plots can fail if they don't receive adequate moisture. This reiterates the importance of focusing on natural vegetation management and using food plots to supplement – not replace – that habitat work.



QDMA constantly receives questions and requests for guidance concerning food plots. To answer the demand, QDMA produced a 324-page book, "Quality Food Plots," which was written by multiple food plot experts and covers every region in North America.

Habitat management on private lands is accelerating at an incredible pace. QDMA members own and manage over 13 million acres in the U.S. Combine that with land being managed by other conservation organization members and the acreage is astounding. Proper habitat management for deer provides year-round cover from hardwood and softwood tree species, old fields and NWSG. Proper habitat management also provides year-round food from hard and soft mast, forbs, vines and shrubs, hardwood and softwood browse, and food plots. A diversity of species, stand types and age classes is necessary to provide this array of forages and cover. The "carrot" for many deer hunters' habitat work is better deer hunting, but good deer habitat benefits many other species as well.

Is Culling Necessary?

Today many hunters are implementing deer management programs aimed at increasing the average age of bucks and the nutritional level for the deer herd. As they begin seeing more 2½-year-old and older bucks, many managers become interested in improving the third piece of the antler formula – genetics. For decades, biologists have debated the practice of improving antler genetic potential by culling or removing specific bucks with undesirable antler traits. The idea is by removing these undesirable bucks you can improve overall antler quality within the deer herd. This idea works well in captivity because you can mate specific bucks to specific does, but is culling an effective strategy for improving the antler quality of free-ranging herds?

First, what is culling? Some managers define culling as removing inferior yearling bucks with few antler points (spikes or three-pointers) or missing points such as brow tines. Others define culling as removing older bucks with a low number of antler points (8 points or less) or other undesirable traits such as a narrow spread. For this discussion, we'll define culling as selectively removing bucks with any undesirable antler traits from any age class.

The hunter who killed this buck said he did so to prevent it from breeding, since it clearly had small, non-symmetrical antlers. Actually, this buck was just a typical yearling (1½ years old), and killing it was counter-productive to the QDM program. But this example reveals the widespread confusion among hunters, and mis-information in the media, regarding "culling" and "management bucks."

Much research has been conducted on this subject, often with seemingly conflicting results. Research from the Kerr Wildlife Management Area in Texas suggested antler quality could be improved by removing spike-antlered yearling bucks. Research from Mississippi State University suggested that yearling bucks' antlers were more a reflection of late birth date and poor nutrition rather than genetics. More current research on state hunting lands in Mississippi suggests that protection of poor-antlered yearling bucks (those with 3 or fewer points) under the state's four-total-point rule has resulted in high-grading, and has produced smaller antlers in older bucks. Current research on the King Ranch in Texas suggests that even aggressive culling on a free-ranging deer herd at the 10,000-acre scale has no impact on antler quality. Confused?

All of these research projects followed strict methodologies and had statistically significant results. However, there are numerous variables involved with a deer herd and its habitat that are difficult to control. For example, different deer herds have different population densities, age structures, sex ratios and nutritional levels (low vs. high). There are differences in soils, supplemental feeding programs, precipitation levels and countless other factors that play a role in a buck's antlers. Therefore, the studies aren't always comparing "apples to apples."

Before you decide which study is most applicable to your specific location, let's look at the breeding ecology of whitetails. For culling to improve the genetic potential of a deer herd's antlers, bucks that are protected must be able to pass their "superior" antler genes to many offspring. Thus, these bucks would have to breed many does and sire many fawns. These bucks' male offspring would

Quotable QDMA:

"It is impossible to control or even predict which bucks breed which does in the wild. Thus, it is difficult to control the genetic traits you select for (or against) by selectively harvesting bucks based on antler characteristics."

require access to high quality nutrition to fully express their antler potential, and they would have to remain in the area for the manager to benefit from his/her efforts.

But do bucks breed many does? It had been widely assumed that a small number of dominant, large-antlered bucks sired most of the fawns. However, current research shows mature bucks don't monopolize breeding rites. Even in populations with good age structure, yearlings and 2½-year-olds sired 15-30 percent of the fawns in northern and southern studies. Interestingly, some large bucks don't appear to sire any fawns. In Dr. Randy DeYoung's long-term study (over 11 years) bucks averaged less than three fawns per year (this is the number of fawns that survived to six months of age and were recruited into the population). There is also the incidence of multiple paternity. Two studies identified multiple paternity in 22-24 percent of multiple litters. That means one of every four to five sets of twins/triplets had multiple fathers. So, dominant bucks don't breed all of the does and they don't even sire all of the fawns from the does they breed.

Since many bucks each do a small amount of the breeding, and since does may breed with multiple bucks, it is impossible to control or even predict which bucks breed which does in the wild. Thus, it is difficult to control the genetic traits you select for (or against) by selectively harvesting bucks based on antler characteristics. And, it is difficult to improve (or degrade) the genetic traits within a deer herd by selectively harvesting bucks based on antler characteristics.

The good news is that we can improve antler size through our harvesting efforts. However, I'm not referring to removing specific bucks. Rather, I'm talking about passing young bucks so they can grow older and have the opportunity to express more of their antler growth potential. This improves the "age" factor of the antler formula and it is extremely easy to do. We can also harvest an appropriate number of does so bucks have more available forage. This, in combination with habitat management, improves the "nutrition" factor of the antler formula. Again, this is easy to do.

It's important to remember that many deer herds have skewed sex ratios, young buck age structures and they exceed their habitat's carrying capacity. In these situations, spikes and small antlers are generally caused by poor nutrition and/or late birth date. These parameters do not allow bucks to express their full genetic potential. We also need to remember that most abnormal antlers are NOT genetically based. Most result from injuries to the skull, pedicle, antler or body, and thus culling would have no effect on the antler genetics of the herd.

Let's revisit the research projects. The results from Dr. Mickey Hellickson's recent culling study in South Texas are likely the most applicable to the average deer manager because of the intensity of the culling efforts and the size of the study area. Mickey and his colleagues intensively culled the smallest antlered bucks in all age classes for eight straight years on 10,000 acres on the King Ranch in Texas. When the study was over, the average antler quality per age class was slightly *smaller* than when they started. While factors such as yearling buck dispersal off the study area could partially account for lack of impact, it clearly suggests that even intensive culling on this scale is unlikely to impact genetics.

So, should we be culling "inferior" bucks? If they are young bucks, the answer is "No" for most of the whitetail's range because they may have been born late or have been nutritionally deprived. If they are older bucks, the answer depends. If you have a surplus of bucks and you really dislike a certain buck – regardless of age – then go ahead and harvest him. However, don't expect it to make a big difference in what you see for antlers in the future. He's likely not siring a lot of fawns and of the ones he sires, the doe contributes half to their offspring's antler quality. Also, about 50-75 percent of yearling bucks disperse one to five miles from where they were born, so an average of ½ to ¾ of his male offspring will leave the area anyway. Unless you're involved in a trophy management program with a balanced buck-to-doe ratio, good buck age structure and optimum nutrition, let him go.

Aging White-tailed Bucks on the Hoof

Harvesting white-tailed bucks based on age is becoming an increasingly common management strategy. To implement this practice, hunters must have the ability to accurately age bucks on the hoof based on their body characteristics, an ability that most hunters considered impossible a decade ago. Today however, hunters across the whitetail's range are estimating the age of bucks in the field to achieve management goals and increase enjoyment.

Like humans, whitetails possess distinct body characteristics by age class, and with a little practice hunters and non-hunters alike can become proficient at estimating the age of bucks on the hoof. There are many good reference books, videos and DVDs available for in-depth instruction and practice on aging bucks, and this article serves to introduce the topic and highlight the differences for each age class from fawns to post-mature animals. These body characteristics are subject to differing interpretation by different viewers, but the characteristics are relative to others in your area or region. Body characteristics also change by season. The breeding season is the best time of year to age bucks because of pronounced neck swelling and tarsal staining. You can estimate their age at other times of the year, but many characteristics are viewed relative to what they will (or did) look like during the rut.

Quotable QDMA:
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Fawns

Fawns are easily distinguished from other age classes of bucks but are commonly misidentified as female deer. Buck fawns have small square bodies, small short heads and relatively large ears. Their heads are flatter between the ears rather than rounded like that of a doe. The distance from their ear to eye is also approximately the same as the distance from their eye to nose. In contrast, the distance from an adult doe's ear to eye is much shorter than from its eye to nose. Fawns also have short necks, flatter bellies and backs, and less muscle definition than adult does. The Quality Deer Management Association (QDMA) has produced an educational poster, "Identifying Antlerless Deer," that uses close-up photography of live deer to help you learn to sort fawns from adult does and buck fawns from doe fawns using these characteristics. This makes a great visual tool for teaching hunting-club members or guests how to avoid harvesting buck fawns.

1½ Years

For most QDM programs, especially those in beginning stages, learning to identify yearling bucks is the most important aging skill. Yearling bucks have long legs, a thin neck, a slim body and an overall lanky appearance. Their legs appear too long for their bodies because their torsos (stomach, chest and neck) are not fully developed. Their antler spread is nearly always less than the width of their ears when their ears are in an alert position. They have a distinct line of separation between their neck and shoulders and little muscle definition. They have a thin waist, and they may have slight staining in their tarsal glands during the rut. Overall, a yearling buck can be said to look like a doe with antlers. In well-managed populations on high-quality-habitat, yearling bucks can have large bodies and even 10 or more antler points, but the above characteristics will be present and can be used to separate them from 2½-year-olds. This is why it is important to study body characteristics before considering antler size when attempting to age a buck in the field.

Note: The trail-camera photos in this section of the Whitetail Report were submitted by QDMA members to the "Age This!" department of Quality Whitetails magazine. A panel of five biologists reviewed each shot to arrive at a consensus age for the deer in the photo.

2½ years

Two-year-olds have legs that still appear too long for their bodies, and they still have an overall sleek appearance. They have developed some muscling in their shoulders and slight swelling in their neck during the rut, but their waist is still thin. Given adequate nutrition, their antler spread can be equal to or wider than their ears. Finally, they can have moderate staining in their tarsal glands during the rut, especially if few mature bucks are in the population.

3½ years

Three-year-olds have legs that appear to be the right length for their bodies because their torsos are now more fully developed. They have muscled shoulders and a highly swelled neck during the rut, but their waist is still lean. I liken three-year-olds to middle linebackers as they are big and strong but they're also lean and fast. A deep chest and lean waist give them a "racehorse" appearance. Their antler spread can be even with or wider than their ears. Research shows that at this age, most bucks have achieved 50 to 75 percent of their antler-growth potential. They also have a lot of tarsal staining during the rut.

Beyond 3½ years of age, determining the exact age of a buck becomes more difficult because of increased variation among individual bucks. However, for most QDM programs, harvest goals can be achieved if hunters are able to confidently separate bucks into one of three groups: A) Yearlings, B) 2½-year-olds, and C) 3½ or older. Hunters who want to sort and select bucks based on ages older than 3½ can still do so, but more time spent studying each buck may be required. In addition to viewing in the field, use trail-camera photos and home-video footage to refine your estimates. Also, once a buck has been harvested, check your own field estimates against age estimates based on toothwear and/or cementum annuli ages from a reputable lab. This will help you hone your skills at aging the deer in your region or habitat type.

4½ years

Because their stomachs, chests and necks are now fully developed, most four-year-olds have legs that appear too short for their body. They have fully-muscled shoulders, heavy swelling in their neck during the rut, and their waist has dropped down to become even with their chest. Given adequate nutrition they'll become structurally mature and can reach 75 to 90 percent of their antler growth potential. They also have a lot of tarsal staining and during the rut the stain may extend below the tarsal gland. Four-year-olds have an entirely different appearance than one- to three-year-old bucks.

5½ to 7½ years

Other than in select places, few free-ranging bucks exceed five years of age so I'll combine five- to seven-year-olds. Bucks in this category have legs that appear too short for their body. They also have several other characteristics of four year olds including fully-muscled shoulders, heavy swelling in their neck during the rut, and a waist that's even with their chest. However, they also may have a pot belly and a sagging back. Their increased body mass gives them a more rounded appearance, and they often look like a small cow. They will have achieved 90 to 100 percent of their antler growth potential, and they can have highly stained tarsal glands during the rut, with the stain extending well below the tarsal gland.

8½ and older

A few free-ranging bucks make it to the post-mature age category. These bucks have passed their prime and regress in both body and antler size. They generally have loose skin on their face, neck and shoulders – usually visible as a "chin flap" – and they may have pointed shoulder and hip bones. Their antlers can show age-related abnormalities such as abnormal points or wavy or curvy tines, and they have an overall "weathered" appearance.

As you study age-specific body characteristics you'll notice there aren't age-specific antler characteristics (other than the range of antler potential that may be reached at each age class, and this percentage can't be accurately estimated by viewing the antlers). Therefore, the QDMA suggests you don't rely solely on antler size when aging bucks. Large antlers on a younger deer and small antlers on an older deer can negatively influence your estimated age. We suggest estimating age based solely on body characteristics with respect to location and time of year and then use antler size to "check" the estimate or to break a tie if you can't decide between two ages.

QDMA offers a number of educational items to assist hunters in learning to age bucks in the field, including this poster showing body characteristics by age class.

For more assistance, we recommend the book "Observing and Evaluating Whitetails" by Dave Richards and Al Brothers, as well as the pocket field guide to aging bucks produced as a companion to this book. Also, QDMA has produced an educational poster, "Estimating Buck Age," that uses photos of live bucks of known ages to illustrate variations in body characteristics by age class. Again, this makes a great visual aid for educating hunters. All of these items are available at www.QDMA.com.

Aging bucks on the hoof is a lot of fun so whether you hunt them with a bow, sporting arm or camera, this information can make you a more knowledgeable whitetail enthusiast.

QDMA's REACH Program

In early 2006, the Quality Deer Management Association unveiled their exciting new REACH program. REACH is an aggressive national education and outreach program that will benefit hunters, landowners and deer managers in several ways. REACH is the acronym for Research, Educate, Advocate, Certify and Hunt. The program specifically addresses all of QDMA's core mission elements and was developed with input from QDMA members, state agency personnel, conservation leaders and QDMA National Board members. QDMA's goals for the program are ambitious, and they will directly benefit all QDMA members. Here is a brief synopsis of each element of REACH.

Research – QDMA expanded its role in designing, influencing, conducting and funding research on practical projects impacting white-tailed deer biology, ecology, management and hunting. QDMA's stance on deer management issues is based on good science, and good science comes from research. The first major accomplishment with this element of REACH occurred in May 2006 when QDMA announced they had secured a $50,000 grant for a cooperative project between the Pennsylvania Cooperative Fish and Wildlife Research Unit at Penn State University and the Pennsylvania Game Commission. Since then, QDMA has secured over $200,000 to support worthwhile research projects in multiple states.

Texas A&M-Kingsville deer research, funded in part through QDMA's REACH program.

Educate – QDMA expanded educational opportunities and activities on deer management and habitat improvement for QDMA members, natural resource professionals and the general public. QDMA continued conducting seminars, workshops and shortcourses and also provided web-based information, new books, charts, DVDs, posters and a nationally televised show, *Quality Whitetails*.

Three exciting new educational items included QDMA's landmark food plot book, *Quality Food Plots: Your Guide to Better Deer and Better Deer Hunting*. This book is over 300 pages and is a "must have" for food plot enthusiasts. The second item is an educational package titled *Living with White-Tailed Deer*. This package includes two versions, one for high schools and one for communities. The high school version is intended for grades 7-12 and is designed to teach students the process urban and suburban communities deal with when they have a deer problem. This is an excellent teaching tool that correlates to National Education Standards and has received The Wildlife Society's Conservation Education Award. The community version is intended for urban and suburban communities experiencing problems with overabundant deer. It explains and discusses the options available to solve their problems. This package educates stakeholders on the realities of urban and suburban deer management and will help communities experiencing problems and state agencies when dealing with urban and suburban deer issues.

One of more than 150 educational events QDMA holds annually for hunters, landowners, school groups and others.

The third item is Cyber Deer. Cyber Deer is a computer-generated program that is most advanced deer anatomy and shot placement tool available. It was created to train new and experienced hunters on organ and skeleton locations and proper shot angles for deer. Users can simulate both ground and tree stand hunting scenarios by selecting different distances and heights from the deer.

Users can also select rifle or bow as Cyber Deer takes proper account of hunting equipment used. Users can rotate the deer and receive instant feedback on shot angles. Users can then "shoot" the deer and receive feedback on shot attempt and shot placement. The user also receives feedback on what their shot hit (heart, lungs, liver, diaphragm, stomach, and/or skeleton), and the shot remains on the screen to assess it and to provide training opportunities. Cyber Deer will help new and experienced hunters make more knowledgeable and ethical shot placement decisions, and more knowledgeable hunters are better stewards of our natural resources and better ambassadors for hunting.

Advocate – QDMA increased its involvement in whitetail hunting and management issues at the state and federal levels. Education and Outreach Directors serve as liaisons between QDMA members/Branches and their respective state and federal agencies. This strengthened QDMA's ties with its members, state and federal agencies, conservation organizations and other stakeholders. Since 2006, QDMA engaged in over 200 legislative and management issues.

Since 2006, QDMA has engaged in more than 200 legislative and management issues at the state and federal level.

Certify –QDMA created an individual certification program that includes three levels of potential achievement, and each must be completed in sequence. Deer Steward I provides students with a comprehensive understanding of the key principles of deer and habitat biology, ecology and management. Deer Steward II teaches students how to apply the principles learned in Level I through hands-on and field experience. Finally, Deer Steward III, the most prestigious, must be earned through an individual's long-term service to white-tailed deer and /or the QDMA. QDMA is also creating a land certification program. The goal of these programs is to create more knowledgeable hunters and managers and to have improved deer herds and habitats.

QDMA's Deer Steward certification courses, launched in 2007, are a growing success.

Hunt – QDMA launched a national mentored youth hunting program. The program provided a framework to unite mentors and youth and is designed to create new long-term hunters. The program incorporates multiple recreational pursuits and is superior to "one time" events designed to expose (vs. mentor) newcomers to the sport. This program is the official QDMA Mentored Hunting Program and is strongly recommended for adoption by QDMA Branches, QDMA members and any individual or group interested in recruiting new hunters. It emphasizes the development of woods skills, wildlife knowledge, hunter safety and shooting skills. Small game and white-tailed deer hunting are both integral parts of the program. Skills are learned and discussed throughout the calendar year and may be reinforced in subsequent years. This is an excellent program that helps combat the declining youth recruitment rates across the country.

For more information on events and programs that are part of REACH, visit www.QDMA.com.

Media Resources

There are a number of ways for outdoor communicators to learn more from QDMA and gain access to our resources, and QDMA offers special opportunities to help. Be sure to also check out the Media Resources page at www.QDMA.com.

The QDMA National Convention
Members of the outdoor media attend the QDMA National Convention free of charge. You cover your travel and lodging, and we cover the rest, including meals at official Convention events. For more information on this opportunity, contact Lindsay Thomas Jr. at (800) 209-3337.

Deer Steward Certification
Each year, QDMA offers a limited number of free seats at Deer Steward Certification courses for outdoor communicators. To find out the Deer Steward course schedule and more information about attending, contact Lindsay Thomas Jr. at (800) 209-3337.

E-mail News and Press Releases
Receive updates on QDMA initiatives, resources, merchandise and events through our special media e-mail news list. To join the mailing list, contact Palmer Pope at (800) 209-3337.

Qualified, Expert Sources
Call on QDMA's staff experts anytime you need quotes or information for a story involving whitetail biology, management or hunting. Refer to page 3 of this report for contact information of specific staff members, or call (800) 209-3337.