QDMA's Whitetail Report 2011

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

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The QDMA Mission:
QDMA is dedicated to ensuring the future of white-tailed deer, wildlife habitat and our hunting heritage.

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Introduction

In 2009, QDMA launched the *Whitetail Report* in an effort to share what we know about the threats, concerns, successes and challenges that are shaping the future of white-tailed deer – the single most important game species in North America. Because more hunters pursue whitetails, by far, than any other game species, and spend more money on deer hunting, by far, than any other type of hunting, whitetails are the foundation of the entire hunting industry. The 2009 and 2010 *Whitetail Reports* were received enthusiastically by members of the hunting media and the commercial hunting industry as well as by deer managers and hunters. It has been quoted, cited, and used as research and reference material by numerous publications and communicators. Copies have been acquired by many organizations, political leaders, professional wildlife managers and educators. Because of the response, QDMA enjoys making this an annual report. We'd like to take this opportunity to thank state and provincial wildlife agency deer biologists from across the whitetail's range for providing much of the data included in Parts 1 and 2 of this report.

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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.

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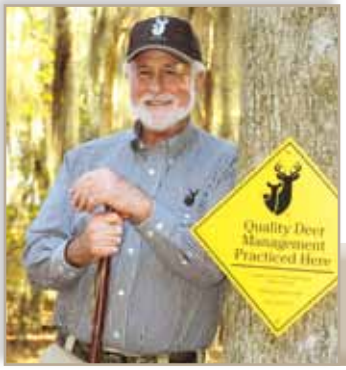

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Part One:

Deer Harvest Trends

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White-Tailed Deer Harvest

The 2010-11 deer season is closed or nearing so for states across the whitetail's range, and biologists will be crunching data in the coming months to assess the outcome of this past season. For this report, QDMA compared harvest data from the two most recent seasons available: 2008-09 and 2009-10. Of the 37 states in the Midwest, Northeast and Southeast (see the map on this page) that comprise the majority of whitetail habitat, we acquired harvest data from 35 for 2008 and 2009. We also acquired data from three eastern Canadian provinces for 2009. We have insufficient data from Canada for interpretations, but it is included in the following tables and we hope to receive data from additional provinces in future years. The following data are from each state and/or provincial wildlife agency. Agencies use different techniques to collect this data, and some collect more data than others. Analyses among agencies may not always compare "apples to apples," but each state/province provided their best possible data. Also, analyses across years should provide valid comparisons for individual agencies.

Antlered Buck Harvest

With respect to antlered buck harvest, 2009 was a tough year for most states in the Northeast, Southeast and Midwest. Of the 34 states in these regions that we received 2008 and 2009 data from, 25 (74 percent) shot fewer antlered bucks in 2009 than in 2008. Only nine states shot as many bucks in 2009 as they did in 2008! In total, these three regions tagged nearly 2.6 million bucks; 6 percent fewer than in 2008. Texas reported the largest harvest at 300,575 antlered bucks. Michigan was next with 215,120 and Georgia was third with 140,142 antlered bucks.

In the Midwest, hunters shot 1,017,255 antlered bucks, 3 percent fewer than in 2008. South Dakota hunters shot 21 percent more bucks, while Michigan and North Dakota hunters each shot 13 percent fewer. Numerically, Michigan shot the most bucks (215,120) and tied Wisconsin for the most bucks shot per square mile. The Midwest averaged harvesting 1.5 bucks per square mile and ranged from 0.4 in North Dakota to 3.7 bucks per square mile in Michigan and Wisconsin.

In the Northeast, hunters shot 491,521 antlered bucks, 7 percent fewer than in 2008. Maine (-18 percent) and Vermont (-16 percent) were hit hardest; a testament to the impacts of recent severe winters. Of the 13 Northeastern states, only New Jersey (+4 percent) and Rhode Island (+3 percent) shot more bucks in 2009 than 2008. Numerically, Virginia shot the most bucks (108,623) with Pennsylvania a close second (108,330). The Northeast averaged shooting two bucks per square mile and ranged from 0.4 bucks in Maine to 3.9 per square mile in New Jersey.

In the Southeast, hunters shot 1,076,572 antlered bucks, 8 percent fewer than in 2008 (this doesn't include data from Florida or Mississippi). Oklahoma hunters shot 11 percent more bucks, while Tennessee hunters shot 11 percent fewer, and Georgia and Texas hunters each shot 12 percent fewer than in 2008. Numerically, Texas shot the most bucks (300,575), with Georgia (140,142), South Carolina (120,356) and Alabama (115,200) also surpassing the 100,000 mark. The Southeast averaged shooting 2.8 bucks per square mile and ranged from 1.2 in Georgia to an amazing 4.9 per square mile in South Carolina and Texas. These two states each harvested about 5 bucks per square mile while there are places in New England where the entire herd measures less than 5 deer per square mile!

Some hunters see fewer harvested bucks as a sign of a poor season or management program. While these may be the case in some areas, fewer harvested deer can result from poor weather during the season or as the result of a reduced deer herd as well as other factors. Depending on your situation, a smaller herd could suggest a successful management program and a deer herd more closely balanced with what the habitat can support. The key is to learn as much as possible about your local deer herd and habitat conditions so you can improve both, along with your hunting opportunities.

Estimated Buck Harvest

Antlered Bucks 1½ Years and Older

State/Province	2007	2008	2009	% change '08 to '09	Bucks PSM
Illinois	81,356	71,813	69,697	-3	1.3
Indiana	49,375	50,845	52,981	4	1.5
Iowa	54,295	51,710	49,612	-4	0.9
Kansas	39,526	41,462	39,629	-4	0.5
Kentucky	49,984	54,936	55,290	1	1.4
Michigan	267,429	248,350	215,120	-13	3.7
Minnesota	109,000	96,000	94,367	-2	1.1
Missouri	120,524	99,957	107,150	7	1.5
Nebraska	34,585	36,235	34,768	-4	0.5
North Dakota	36,445	33,963	29,707	-13	0.4
Ohio	87,648	89,962	93,905	4	2.3
South Dakota	33,398	33,413	40,333	21	0.5
Wisconsin	170,142	138,507	134,696	-3	3.7
MIDWEST TOTAL	**1,133,707**	**1,047,153**	**1,017,255**	**-3**	**1.5**
Connecticut	5,312	5,892	5,534	-6	*
Delaware	3,501	3,771	3,461	-8	2.3
Maine	16,103	13,564	11,141	-18	0.4
Maryland	32,221	34,725	32,646	-6	3.3
Massachusetts	5,826	5,582	5,444	-2	1.2
New Hampshire	7,667	6,390	5,940	-7	0.7
New Jersey	17,467	18,399	19,181	4	3.9
New York	104,451	105,747	102,057	-3	2.2
Pennsylvania	109,200	122,410	108,330	-12	2.4
Rhode Island	1,067	1,055	1,089	3	1.7
Vermont	8,955	9,539	8,039	-16	1.0
Virginia	109,718	112,207	108,623	-3	3.0
West Virginia	83,033	86,914	80,036	-8	*
NORTHEAST TOTAL	**504,521**	**526,195**	**491,521**	**-7**	**2.0**
Alabama	129,600	*	115,200		2.4
Arkansas	94,834	93,375	88,710	-5	1.7
Florida	74,235	*	*		*
Georgia	143,092	159,567	140,142	-12	1.2
Louisiana	110,660	87,010	81,015	-7	3.1
Mississippi	131,970	132,167	*		*
North Carolina	83,665	85,051	81,283	-4	2.3
Oklahoma	58,059	59,449	65,755	11	*
South Carolina	112,522	119,346	120,356	1	4.9
Tennessee	77,604	93,873	83,536	-11	2.0
Texas	288,227	340,159	300,575	-12	4.9
SOUTHEAST TOTAL	**1,304,468**	**1,169,997**	**1,076,572**	**-8**	**2.8**
3-REGION TOTAL	**2,942,696**	**2,743,345**	**2,585,348**	**-6**	**2.1**
Arizona	4,333	5,080	13,088	158	*
California	*	*	0		0.0
Colorado	*	*	*		*
Idaho	14,885	13,610	*		*
Montana	*	*	*		*
Nevada	*	*	*		*
New Mexico	162	137	300	119	*
Oregon	1,086	815	*		*
Utah	*	*	*		*
Washington	*	*	*		*
Wyoming	7,975	8,304	8,548	3	*
WEST TOTAL	**28,441**	**27,946**	**21,936**	**-22**	
New Brunswick			3,845		0.1
Nova Scotia			7,199		*
Ontario			42,210		*
Quebec			24,133		0.6
EASTERN CANADA TOTAL			**77,387**		**0.4**

* data not available; PSM: Per Square Mile in 2009

Quotable QDMA:

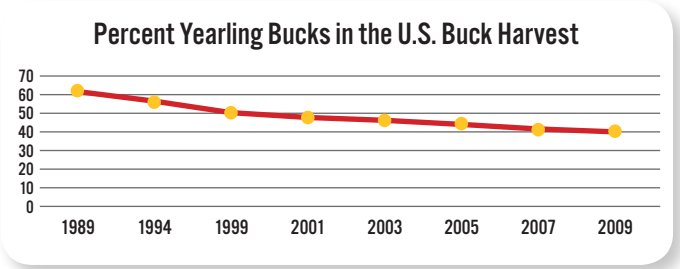
Of the 34 states that we received 2008 and 2009 data from, 25 (74 percent) shot fewer antlered bucks in 2009 than in 2008. Only nine states shot as many bucks in 2009 as they did in 2008!

Quotable QDMA:

In 2009, the Southeast reported a much lower percentage of yearling bucks in the harvest (32 percent) than the Midwest (43 percent) or Northeast (49 percent).

Age Structure of the Buck Harvest

QDMA also acquired the age structure of the buck harvest data for most states. Twenty-six states reported the percentage of their antlered buck harvest that was 1½ years old, and 21 states reported the percentage that was also 2½ and 3½ years or older. In 2009, the average percentage of the antlered buck harvest that was 1½ years old was 41 percent, equal to the percentage in 2008. The line graph below shows how the yearling percentage of the antlered buck harvest in the U.S. has changed during the past two decades.



In 2009, Arkansas averaged the fewest yearlings (10 percent of antlered buck harvest) and South Carolina averaged the most (65 percent of antlered buck harvest). Other notables included Mississippi (14 percent), Louisiana (16 percent from DMAP areas) and Missouri (19 percent in antler point restriction counties) averaging fewer than one yearling per five harvested antlered bucks.

Eighteen of 26 states (69 percent) that provided age structure data shot a lower percentage of yearling bucks in 2009 than 2008, two states recorded equal percentages, and only six states shot a higher percentage of yearling bucks. The percent change from 2008 ranged from -39 percent in Minnesota to +233 percent in Vermont. However, Vermont's seemingly large percentage increase is due more to a change in data collection technique than a change in herd or harvest age structure. Notables included Minnesota's big decline in yearling harvest rate, and regionally speaking, the Southeast reported a much lower percentage of yearling bucks in the harvest (32 percent) than the Midwest (43 percent) or Northeast (49 percent). In 2009, the Midwest reduced the percentage of yearlings in the harvest while the Northeast and Southeast both increased this statistic.

The average percentage of the antlered buck harvest that was 2½ years old was similar in 2008 (32 percent) and 2009 (30 percent). In 2009, this statistic ranged from 19 percent in Louisiana DMAP areas to 42 percent in Tennessee and 44 percent in Missouri's antler point restriction counties (Missouri averaged 31 percent in non-antler point restriction counties). Virginia (34 percent), Alabama (35 percent), Kentucky (38 percent), Rhode Island (38 percent), Indiana (40 percent), Tennessee and Missouri antler point restriction counties all reported more than one in three harvested bucks as 2½ years old. Hunters are obviously benefiting from passing yearling bucks.

Twenty-one of 26 states (81 percent) that we received age structure data from were able to also provide the percentage of bucks 3½ years and older in the harvest; kudos to these states for their data collection efforts. The average percentage of the antlered buck harvest that was 3½ years and older was 30 percent in 2009, up slightly from 29 percent in 2008. This is equal to the percentage of 2½-year-olds and not much lower than the percentage of yearlings. This is a testament to how far we've come as hunters and managers in the past decade. This statistic ranged from 9 percent in New Jersey to 66 percent in Mississippi. Other notables included Louisiana (65 percent in DMAP areas), Arkansas (64 percent) and Alabama (40 percent). Fourteen of 19 states (74 percent) with comparable data for 2008 and 2009 shot a higher percentage of 3½ years and older bucks in 2009. Regionally, the Northeast (22 percent) and Midwest (23 percent) had similar percentages while the Southeast averaged nearly twice the percentage of bucks in these older age classes (40 percent).

Buck Harvest by Age Class

	1½ Years Old			2½ Years Old			3½ Years Old		
State/Province	**2007**	**2008**	**2009**	**2007**	**2008**	**2009**	**2007**	**2008**	**2009**
Illinois	39	41	39	*	*	*	*	*	*
Indiana	44	40	36	39	40	40	17	20	24
Iowa	*	*	*	*	*	*	*	*	*
Kansas	19	17	*	46	34	*	36	49	*
Kentucky	45	41	40	40	38	38	15	21	22
Michigan	62	61	52	24	25	28	14	14	20
Minnesota	67	67	41	20	20	*	10	10	*
Missouri	24(52)**	22(58)**	19(51)**	53(36)**	54(31)**	44(31)**	23(13)**	24(11)**	37(19)**
Nebraska	40	34	31	*	*	*	*	*	*
North Dakota	*	*	*	*	*	*	*	*	*
Ohio	50	50	49	32	32	32	18	18	19
South Dakota	*	*	*	*	*	*	*	*	*
Wisconsin	56	53	54	*	*	26	*	*	20
MIDWEST AVERAGE	**46**	**44**	**43**	**35**	**34**	**34**	**19**	**22**	**23**
Connecticut	40	40	*	*	*	*	*	*	*
Delaware	59	53	*	28	29	*	13	19	*
Maine	49	37	44	25	23	25	13	15	31
Maryland	63	62	57	*	*	*	*	*	*
Massachusetts	40	39	49	22	24	28	21	19	23
New Hampshire	45	45	45	32	26	27	23	29	28
New Jersey	62	64	60	*	*	31	*	*	9
New York	62	62	59	26	26	27	12	12	14
Pennsylvania	56	52	49	32	35	*	12	13	*
Rhode Island	47	38	27	30	27	38	23	35	36
Vermont	25	15	50	50	59	30	25	26	20
Virginia	38	37	48	36	37	34	26	26	18
West Virginia	*	*	*	*	*	*	*	*	*
NORTHEAST AVERAGE	**49**	**45**	**49**	**31**	**32**	**30**	**19**	**22**	**22**
Alabama	28	25	25	31	35	35	41	40	40
Arkansas	22	13	10	34	38	26	42	49	64
Florida	*	*	*	*	*	*	*	*	*
Georgia	43	45	37	29	32	29	28	23	34
Louisiana	24	22	16***	19	20	19***	49	50	65***
Mississippi	16	17	14	21	21	20	59	58	66
North Carolina	41***	39***	*	38***	39***	*	20***	22***	*
Oklahoma	39	27	*	34	32	*	17	26	*
South Carolina	59	59	65	23	23	20	18	18	15
Tennessee	49	44	38	36	40	42	15	16	20
Texas	20	27	*	20	19	*	59	54	*
SOUTHEAST AVERAGE	**33**	**31**	**32**	**27**	**29**	**29**	**36**	**37**	**40**
3-REGION AVERAGE	**43**	**41**	**41**	**31**	**32**	**30**	**25**	**29**	**30**
New Brunswick	*	*	39	*	*	23	*	*	38
Nova Scotia	*	*	26	*	*	22	*	*	52
Ontario	*	*	*	*	*	*	*	*	*
Quebec	*	*	*	*	*	*	*	*	*
EASTERN CANADA AVERAGE			**33**			**23**			**45**

* data not available;
** data from antler-point-restriction counties (non-antler-point-restriction counties)
*** data from check stations and/or DMAP

Antlerless Harvest

Antlerless harvests vary widely among states and years due to differences in deer density, productivity, a state's goals (reducing, stabilizing, or increasing the deer population), weather and other factors. However, we can learn much about a state's management program by comparing the antlerless and antlered buck harvests. Continuing with the analysis of states in the Midwest, Northeast and Southeast, hunters from these regions harvested 3,253,167 antlerless deer in 2009 (does not include data from Florida or Mississippi). This was slightly lower (-4 percent) than the 2008 antlerless harvest (did not include data from Alabama or Florida). Overall, Texas topped the list with 258,782 antlerless deer. Georgia followed with 258,536, Michigan was third with 220,916, and Pennsylvania was fourth with 200,590 antlerless deer. New Jersey harvested the most antlerless deer per square mile (6.8), followed by Georgia (6.7), Maryland (6.7) and Delaware (6.0). As stated earlier, these states are shooting more antlerless deer per square mile than some areas have for a standing crop of bucks, does and fawns combined! Regionally, the Southeast averaged shooting more antlerless deer per square mile (3.6) than the Northeast (3.2) and far more than the Midwest (2.1).

Also regionally, the Midwest shot 10 percent fewer antlerless deer in 2009 (1,384,454) than in 2008 (1,536,778). Numerically, Nebraska (29,711) and North Dakota (45,119) shot the fewest antlerless deer, and Wisconsin (192,557) and Michigan (220,916) shot the most. Wisconsin shot the most per square mile (5.4), followed by Ohio (4.1), Michigan (3.8) and Missouri (2.7). Nebraska (0.4), North Dakota (0.6), South Dakota (0.6) and Kansas (0.6) averaged the fewest antlerless deer harvested per square mile.

Twelve of 13 (92 percent) Midwest states shot more antlerless deer than antlered bucks. Only Nebraska shot more antlered bucks than antlerless deer. The Midwest averaged shooting 1.4 antlerless deer per antlered buck, and this ranged from 0.9 in Nebraska to 1.8 in Iowa, Missouri and Ohio.

The Northeast shot 684,987 antlerless deer in 2009, 1 percent fewer than in 2008. Numerically, Rhode Island (1,035) and New Hampshire (4,444) took the fewest while Virginia (150,401) and Pennsylvania (200,590) took the most antlerless deer. New York (+3 percent) and Virginia (+4 percent) shot more, and every other Northeastern state shot fewer antlerless deer in 2009 than 2008. The reduced harvests ranged from less than 1 percent in Maryland to -14 percent in Rhode Island. New Jersey shot the most antlerless deer per square mile (6.8), followed by Maryland (6.7), Delaware (6.0) and Pennsylvania (4.4). Northern New England averaged the fewest at 0.2 in Maine, 0.6 in New Hampshire and 0.9 antlerless deer harvested per square mile in Vermont; a testament to the differences in deer management programs in states with severe winters.

Only seven of 13 (54 percent) northeastern states shot more antlerless deer than antlered bucks. However, five of six states that shot more bucks are in New England. West Virginia is the only Northeastern state not in the extreme northeast portion of this region that harvested fewer antlerless deer than antlered bucks. The Northeast averaged shooting 1.4 antlerless deer per antlered buck and this ranged from 0.6 in Maine to 2.6 antlerless deer per antlered buck in Delaware.

The Southeast (minus Florida and Mississippi) shot 1,183,726 antlerless deer in 2009, 3 percent more than in 2008. However, data from Alabama was available in 2009 but not 2008, and data from Mississippi was available in 2008 but not 2009. Numerically, Oklahoma (50,420) and Louisiana (66,285) took the fewest while Georgia (258,536) and Texas (258,782) took the most antlerless deer. Arkansas had the largest numerical (+23,368) and percentage (+31 percent) increases from 2008. Half of the southeastern states shot more antlerless deer

Continued.

Estimated Antlerless Deer Harvest

State/Province	2007	2008	2009	% change '08 to '09	antlerless PSM	antlerless per antlered
Illinois	118,246	117,088	119,937	2	2.1	1.7
Indiana	75,052	78,903	79,771	1	2.2	1.5
Iowa	91,919	90,484	86,892	-4	1.6	1.8
Kansas	34,155	39,028	47,418	21	0.6	1.2
Kentucky	63,451	65,674	58,295	-11	1.5	1.1
Michigan	216,555	241,573	220,916	-9	3.8	1.0
Minnesota	151,000	126,000	99,819	-21	1.1	1.1
Missouri	180,391	182,162	189,647	4	2.7	1.8
Nebraska	22,537	32,397	29,711	-8	0.4	0.9
North Dakota	61,673	57,577	45,119	-22	0.6	1.5
Ohio	145,206	162,055	167,355	3	4.1	1.8
South Dakota	36,642	30,459	47,017	54	0.6	1.2
Wisconsin	347,431	313,378	192,557	-39	5.4	1.4
MIDWEST TOTAL	**1,544,258**	**1,536,778**	**1,384,454**	**-10**	**2.1**	**1.4**
Connecticut	5,750	6,790	6,240	-8	*	1.1
Delaware	10,139	10,105	8,939	-12	6.0	2.6
Maine	12,781	7,497	6,951	-7	0.2	0.6
Maryland	59,987	65,712	65,635	0	6.7	2.0
Massachusetts	5,713	5,620	4,884	-13	1.1	0.9
New Hampshire	5,892	4,526	4,444	-2	0.6	0.7
New Jersey	29,549	34,859	33,603	-4	6.8	1.8
New York	114,690	117,232	120,741	3	2.6	1.2
Pennsylvania	213,870	213,440	200,590	-6	4.4	1.9
Rhode Island	1,029	1,210	1,035	-14	1.6	1.0
Vermont	5,516	7,452	7,148	-4	0.9	0.9
Virginia	133,074	144,175	150,401	4	4.2	1.4
West Virginia	62,904	76,689	74,376	-3	*	0.9
NORTHEAST TOTAL	**660,894**	**695,307**	**684,987**	**-1**	**3.2**	**1.4**
Alabama	212,400	*	173,800		3.6	1.5
Arkansas	59,827	74,963	98,332	31	1.9	1.1
Florida	46,844	*	*		*	
Georgia	207,623	239,350	258,536	8	6.7	1.8
Louisiana	90,540	71,190	66,285	-7	2.5	0.8
Mississippi	143,647	148,687	*		*	
North Carolina	88,321	91,246	87,990	-4	2.5	1.1
Oklahoma	37,832	45,820	50,420	10	*	0.8
South Carolina	126,671	129,432	111,338	-14	5.6	0.9
Tennessee	86,907	70,540	78,243	11	1.9	0.9
Texas	224,625	279,491	258,782	-7	4.2	0.9
SOUTHEAST TOTAL	**1,325,237**	**1,150,719**	**1,183,726**	**3**	**3.6**	**1.1**
3-REGION TOTAL	**3,530,389**	**3,382,804**	**3,253,167**	**-4**	**2.8**	**1.3**
Arizona	0	0	138		*	
California	*	*	0		*	
Colorado	*	*	*		*	
Idaho	7,159	6,149	*		*	
Montana	*	*	*		*	
Nevada	*	*	*		*	
New Mexico	0	0	0		*	
Oregon	73	63	*		*	
Utah	*	*	*		*	
Washington	*	*	*		*	
Wyoming	5,980	6,488	6,865	6		
WEST TOTAL	**13,212**	**12,700**	**7,003**	**-45**		
New Brunswick			1,199		<0.1	0.3
Nova Scotia			3,081		*	*
Ontario			20,790		*	*
Quebec			26,605		0.6	1.1
EASTERN CANADA TOTAL			**51,675**		**0.3**	**0.7**

* data not available; PSM: Per Square Mile in 2009

Quotable QDMA:

Regionally, the Southeast averaged shooting more antlerless deer per square mile (3.6) than the Northeast (3.2) and far more than the Midwest (2.1).

Quotable QDMA:
In 2009, 12 of 35 states (33 percent) shot more antlered bucks than antlerless deer, and 11 of the 12 states were in the Northeast or Southeast. Hopefully the 2010 harvest shows far fewer states harvesting more bucks than antlerless deer.

in 2009 than 2008 (Arkansas, Georgia, Oklahoma and Tennessee) and half shot fewer in 2009 (Louisiana, North Carolina, South Carolina and Texas). The reduced harvests ranged from -4 percent in North Carolina to -14 percent in South Carolina. The increases ranged from 8 percent in Georgia to 31 percent in Arkansas. Georgia shot the most antlerless deer per square mile (6.7), followed by South Carolina (5.6) and Texas (4.2). Arkansas and Tennessee averaged the fewest at 1.9 antlerless deer harvested per square mile.

Only four of nine (44 percent) southeastern states shot more antlerless deer than antlered bucks in 2009. The Southeast averaged shooting 1.1 antlerless deer per antlered buck and this ranged from 0.8 in Louisiana and Oklahoma and 0.9 in South Carolina, Tennessee and Texas to 1.5 in Alabama and 1.8 antlerless deer per antlered buck in Georgia.

Reduced antlerless harvests are necessary in areas where deer herds have been balanced with the habitat, but very few states should be harvesting more bucks than antlerless deer on a regular basis. In 2009, 12 of 35 states (33 percent) shot more antlered bucks than antlerless deer, and 11 of the 12 states were in the Northeast or Southeast. Hopefully the 2010 harvest shows far fewer states harvesting more bucks than antlerless deer.

Percent "Biochecked"

All states and provinces have some means to estimate the number of deer harvested in their jurisdictions during the hunting season. Some require physical registration at a station, some offer online reporting, and others use telephone reporting (telecheck) or mail-in report cards. Regardless of the technique used, it is important for deer managers to collect biological data (age, weight, antler parameters, lactation status, etc.) from a representative sample of the total harvest. Commonly referred to as check stations or "biocheck" stations, biologists, technicians and conservation officers collect data that is used to assess herd and habitat health. This data is the backbone of many deer management programs.

We surveyed all state and provincial wildlife agencies to determine the percentage of the total deer harvest that was "biochecked" in 1999, 2004 and 2009. The following table shows the regional rates for the past decade. The Midwest averaged 8 percent in 2009 and this rate declined from 15 percent in 1999 to the present. It ranged from zero in North Dakota to 30 percent in South Dakota and 33 percent in Nebraska in 2009. Most Midwestern states biochecked 2 to 4 percent of the harvest in 2009.

The Northeast had the highest average of the three regions by biochecking 10 percent of the harvest in 2009. This percentage was slightly less but similar to the 2004 and 1999 values. In 2009 it ranged from zero in Delaware to 24 percent in Maine and Massachusetts. Four northeastern states biochecked at least 10 percent of the harvest; no small feat for Virginia as the Old Dominion state harvested nearly 260,000 deer in 2009.

The Southeast averaged biochecking 5 percent of the harvest in 2009. This rate was consistent from 1999 to 2009, and is lower than the Midwest and Northeast averages. It ranged from 1 percent in South Carolina to 10 percent in Alabama.

The proper percentage to biocheck varies based on the total number of deer harvested, but QDMA prefers to see a minimum of 5 to 10 percent.

Deer Harvest Summary

Hunters harvested over 6 million white-tailed deer in the U.S. in 2009. These whitetails provided tremendous recreational opportunity, billions to the economy, and millions of wholesome meals. White-tailed deer have a larger impact on the hunting industry than all other game species combined. Fortunately, the sex ratio and age structure of modern-day deer populations are far better than those of a decade or two ago. Today's hunters can truly be described as managers and stewards of our natural resources, particularly the majestic white-tailed deer.

Percentage of Deer Biochecked

State/Province	1999	2004	2009
Illinois	68	61	5
Indiana	2	2	4
Iowa	2	2	4
Kansas	*	*	*
Kentucky	0	2	2
Michigan	8	9	7
Minnesota	*	*	2
Missouri	2	2	2
Nebraska	33	33	33
North Dakota	0	0	0
Ohio	5	4	2
South Dakota	30	30	30
Wisconsin	<1	4	2
MIDWEST AVERAGE	**15**	**13**	**8**
Connecticut	*	*	*
Delaware	0	0	0
Maine	21	24	24
Maryland	6	5	5
Massachusetts	35	25	24
New Hampshire	14	10	8
New Jersey	10	9	4
New York	10**	6**	7**
Pennsylvania	10	9	9
Rhode Island	20	20	17
Vermont	7	8	4
Virginia	11	11	10
West Virginia	*	*	*
NORTHEAST AVERAGE	**13**	**11**	**10**
Alabama	1	1	10
Arkansas	*	5	6
Florida	*	*	*
Georgia	3	3	2
Louisiana	18	12	8
Mississippi	*	*	*
North Carolina	3	3	4
Oklahoma	*	*	*
South Carolina	1	1	1
Tennessee	3	3	3
Texas	*	*	*
SOUTHEAST AVERAGE	**5**	**4**	**5**
3-REGION AVERAGE	**12**	**10**	**8**
Arizona	*	*	<1
California	*	*	*
Colorado	*	*	*
Idaho	*	*	*
Montana	*	*	*
Nevada	*	*	*
New Mexico	*	*	*
Oregon	*	*	*
Utah	*	*	*
Washington	*	*	*
Wyoming	*	*	*
New Brunswick	16	17	14
Nova Scotia	100	100	50
Ontario	*	*	*
Quebec	<1	<1	<1

* data not available
** data from adult bucks only

Part Two:

Current Issues & Trends

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Quotable QDMA:

Since 2006, the Boone & Crockett Club has experienced a 10 percent decline in the total number of entries, while the Pope & Young Club has seen an 18 percent decrease in total entries.

A Decline in Record-Book Bucks?

In 2008, QDMA produced a popular five-poster series, including one that displays a distribution map of every registered Boone & Crocket (B&C) and Pope & Young (P&Y) Club record-book whitetail that was harvested in the United States between 1996 and 2005. In our 2009 Whitetail Report, Dr. Joel Helmer, who helped create that map, discussed how and why the distribution of those bucks had changed, both temporally and spatially.

Helmer explained that as management styles across the continent shifted from one of rebuilding herds to one of managing for quality, an increased interest and success rate of harvesting mature, record-book bucks had been realized, and with it the popularity and promotion of both state and national record-book programs. He also noted the total number of record-book entries for both clubs had increased steadily every year, in particular during the 10-year time span the QDMA map covered.

Outdoor writer Patrick Durkin confirmed that same sentiment in his June 2010 article in NRA's *American Hunter* magazine, titled "Where Those Big, Gnarly Bucks Are Coming From Now." In fact, Durkin wrote that the last decade-long cohort of B&C entries (2000 to 2009; 4,423) saw an amazing 31 percent increase from the previous 10 years (1990 to1999; 3,387), and that nearly 70 percent of all B&C records since 1840 had been harvested during these last two decades. Clearly it appeared that the good ol' days of deer hunting had arrived.

However, the tide may – or may not – be changing.

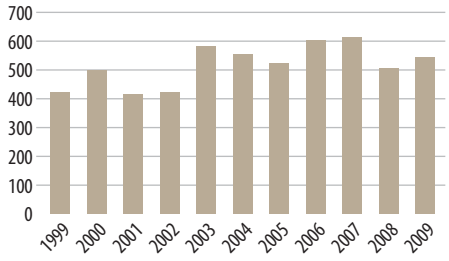
Our original intent for this report was to look at current trends in record-book harvests in ways that have never been investigated before in other "ranking" analyses. To do so, we first needed to obtain state and provincial entries for all qualifying whitetails, for both B&C* (minimum 160 typical, 185 non-typical) and P&Y (minimum 125 typical, 155 non-typical) record programs, during the last 10 years. We know that not all eligible bucks are registered, and the actual proportion that are may vary by state or region. However, both programs' long-term data offer the best source to analyze national trends. Over that decade, 5,683 and 27,174 eligible trophies were recorded by the B&C and P&Y Clubs, respectively. And, even at first glance, a recent pattern was immediately noticeable. It appears there has been a decrease in the total number of entries for both clubs in the past couple of years (see the charts below). Since 2006, the B&C Club has experienced a 10 percent decline; while the P&Y Club has seen an 18 percent decrease in total entries.

Obviously, we were intrigued by this finding. Are less record-book whitetails actually being harvested? Or, is something else amiss? To corroborate the above trend, we also contacted a few of the state and provincial record-keeping organizations.

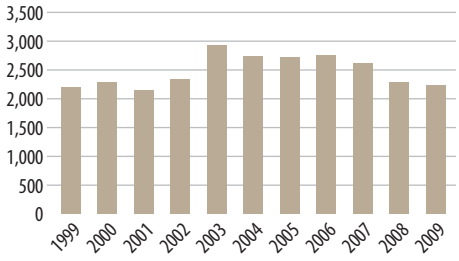
Going Local

Regionally speaking, the Magnolia Records Program (MRP) is one of the most popular state-level record-book organizations for white-tailed deer in the South. Mississippi is also a good candidate to investigate this possible trend because

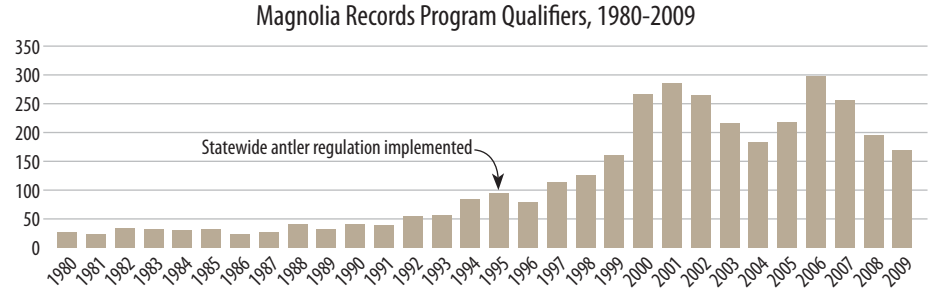
Boone & Crockett Club Entries Per Year
1999-2009



Pope & Young Club Entries Per Year
1999-2009



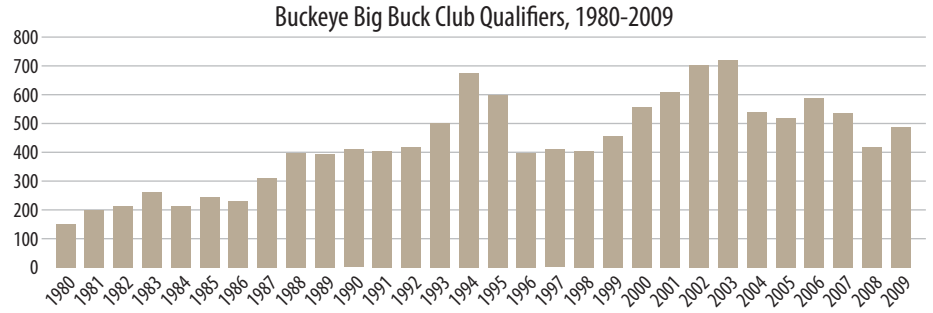
* Minimum B&C scores for this data are based on the Boone & Crockett Club Awards program (160 typical, 185 non-typical), which are lower than the B&C All-Time record minimums (170 typical, 195 non-typical).



of its historical change in buck harvest regulations (in 1995 a statewide antler restriction was implemented), and because it is a state that now routinely harvests a high proportion (66 percent) of 3½-year-old or older bucks. According to Rick Dillard, U.S. Forest Service Fish & Wildlife Program Manager and overseer of the MRP, the number of qualifiers (minimum 125 typical, 155 non-typical) entered into the MRP the last four years has also declined (see the chart above).

Although Dillard feels that the same or more MRP bucks are falling statewide now, more than ever, he attributes this recent drop in total entries to voluntary, and sometimes mandated, acts of not getting qualifying bucks scored by successful hunters. Dillard explained that more and more Mississippi deer hunters are fearful of increased lease rates and/or unwanted attention to their hunt clubs or wildlife management units when a trophy buck is killed. Certainly, this could be a possible explanation. So, we looked north to see if the same trend exists.

The gold standard record-book program in Ohio is the Buckeye Big Buck Club (BBBC). Since 1958, the BBBC has scored over 13,000 record-book (minimum 140 typical, 160 non-typical) deer and easily is the most popular form of recognition for residents when downing an Ohio trophy. However, surprisingly, data provided by BBBC Secretary Mike Rex indicates that a similar decline occurred in their records program over the same time period (see the chart below).



So, what exactly is happening? Are there fewer trophy bucks out there than five years ago, or just fewer hunters getting their bucks scored? Some experts suggest that with the explosion of QDM across North America that the minimum scores to become accepted into these national and regional record-book programs are no longer the baseline, and that hunters are now actually passing on bucks that once were seen as eligible trophies. Others suggest that possibly with the reduction of our hunter force over time, paired with rising license and travel costs and the recent difficult economy, fewer hunters are out there paying for the opportunity to harvest bucks. Or, maybe, the popularity of getting the recognition, in other words the "attention", when harvesting a record-book buck is truly beginning to wane. Still others suggest that the record year for hemorrhagic disease (HD) in 2007 can be seen in this trend in some localized areas. Perhaps it's a combination of all of these reasons.

Realistically, it could very well be the

Quotable QDMA:

With the increasing popularity of QDM programs across the continent, today there are more hunters and landowners passing young bucks, manipulating habitat, and enjoying the fruits of their labor beyond the number of inches of whitetail antler grown.

result of a three- to five-year "time lag" effect for registration, as most record programs don't have a statute of limitations on scoring and accepting entries, aside from the usual 60-day drying period. In fact, BBBC routinely sees 15 percent of their annual entries harvested five years or more from the actual scoring date.

A Closer, Different Look

To better understand what may be going on with this recent trend, as well as to level the playing field when comparing two or more state/province's record-book potential, we looked at B&C and P&Y records during the past decade in a different way. We feel that this new perspective will more closely represent the average hunter's opportunity to kill a record-book whitetail while afield.

PTSM – Per Thousand Square Miles

We began by breaking down the total number of B&C and P&Y records for each state or province on a per square mile basis. However, to standardize this figure across time, we chose to use the 10-year mean for each Club (1999 to 2009) and expressed the result as the average number of record-book bucks killed for every 1,000 square miles (PTSM) annually during that 10-year period. In that respect, and for ranking purposes, the top ten states were as follows:

Record-Book Bucks Per Thousand Square Miles 1999-2009

State	P&Y PTSM*	State	B&C PTSM*
Wisconsin	7.63	Illinois	1.07
Illinois	5.68	Kentucky	0.85
Indiana	3.68	Iowa	0.80
Iowa	3.64	Ohio	0.79
Ohio	3.46	Wisconsin	0.79
New Jersey	2.31	Indiana	0.74
Maryland	2.27	Rhode Island	0.65
Connecticut	2.07	Delaware	0.60
Pennsylvania	1.73	Missouri	0.57
Kansas	1.56	Kansas	0.39

*Per Thousand Square Miles (mean estimated harvest rate)

However, to stay in line with previous QDMA analyses, as well as to help further investigate the latest declining trend, we also grouped the state and provincial listings in regional format and investigated the same variable over time (see the table on the facing page).

Generally speaking, there was a +36 and -2 percent change in the estimated PTSM harvest rates of B&C and P&Y record-book bucks across the three major whitetail regions from 1999 to 2009, respectively. However, there were a few interesting revelations when looking at the individual regions based on harvests PTSM for both clubs.

In the Midwest, states like Indiana, Michigan, Missouri, North Dakota and South Dakota improved markedly in the past decade, while at the same time big name trophy states like Illinois and Wisconsin remained stable or lost some ground. Either way, there are far more Midwestern states today that offer a real opportunity at record-book deer than there were 10 years ago, including most of the ones listed above, as well as places like Iowa, Kansas, Kentucky and Ohio.

In the Northeast, smaller states like Connecticut, Delaware, and Rhode Island occasionally ranked high in this type of analysis; partly due to their size, and partly due to the fact they offer genuine opportunities at record-book deer, especially within suburban and fragmented habitats. Meanwhile, states like Maryland, New Jersey and Pennsylvania consistently proved to be among the region's best areas.

In the Southeast, Texas usually reigns supreme when looking at sheer numbers of trophy bucks being killed; however, when based on the ratio of record-book bucks harvested PTSM, states such as Arkansas, Georgia, Mississippi and Oklahoma frequently took the top honors and currently register the highest density of trophies per area.

In the West, our analysis showed that hunters in Colorado, Montana and Washington time and again killed more record whitetail bucks PTSM than their neighboring states; while the provinces of Alberta and Saskatchewan, even with their massive territories, managed to score the most record-book bucks on average when it comes to **Canada** whitetail populations.

Perhaps what was most noticeable was just how rare eligible B&C and P&Y record-book deer appear to be when comparing their harvest PTSM, even for some of the more renowned trophy-producing states. For example, Wisconsin hunters killed (and registered) 137 B&C

Estimated Harvest Rate of Record-Book Bucks Per Thousand Square Miles

	Boone & Crockett Club			Pope & Young Club		
State/Province	1999	2009	% change 1999-2009	1999	2009	% change 1999-2009
Illinois	0.85	0.85	0%	5.34	3.47	-35%
Indiana	0.38	1.29	236%	1.76	4.28	144%
Iowa	0.68	0.78	16%	2.90	2.33	-20%
Kansas	0.34	0.52	54%	1.06	1.91	80%
Kentucky	0.49	0.97	95%	0.89	1.24	39%
Michigan	0.04	0.12	200%	0.69	0.62	-10%
Minnesota	0.23	0.28	20%	0.77	0.95	24%
Missouri	0.30	0.83	176%	1.29	1.38	7%
Nebraska	0.16	0.10	-33%	0.47	0.79	69%
North Dakota	0.01	0.03	100%	0.31	0.83	168%
Ohio	0.56	1.05	88%	3.17	3.50	11%
South Dakota	0.03	0.06	150%	0.30	0.57	91%
Wisconsin	0.75	0.76	2%	7.85	7.27	-7%
MIDWEST AVG	**0.37**	**0.59**	**59%**	**2.06**	**2.24**	**9%**
Connecticut	0.00	0.00	0%	2.53	0.72	-71%
Delaware	0.40	0.00	-100%	1.21	0.80	-33%
Maine	0.20	0.06	-71%	0.08	0.06	-33%
Maryland	0.32	0.40	25%	2.42	1.53	-37%
Massachusetts	0.19	0.00	-100%	1.14	0.95	-17%
New Hampshire	0.21	0.11	-50%	0.96	0.43	-56%
New Jersey	0.00	0.11	100%	2.06	1.95	-6%
New York	0.09	0.04	-60%	1.41	0.99	-30%
Pennsylvania	0.02	0.13	500%	1.02	1.89	85%
Rhode Island	0.00	0.00	0%	0.00	0.65	100%
Vermont	0.00	0.00	0%	0.00	0.00	0%
Virginia	0.12	0.12	0%	0.47	0.19	-60%
West Virginia	0.04	0.04	0%	1.44	0.78	-46%
NORTHEAST AVG	**0.12**	**0.08**	**-37%**	**1.13**	**0.84**	**-26%**
Alabama	0.00	0.02	100%	0.06	0.04	-33%
Arkansas	0.09	0.15	60%	0.28	0.41	47%
Florida	0.00	0.00	0%	0.00	0.00	0%
Georgia	0.07	0.07	0%	0.34	0.64	90%
Louisiana	0.02	0.04	100%	0.15	0.14	-13%
Mississippi	0.06	0.06	0%	0.52	0.58	12%
North Carolina	0.04	0.02	-50%	0.11	0.26	133%
Oklahoma	0.10	0.14	43%	0.41	0.47	14%
South Carolina	0.00	0.03	100%	0.06	0.06	0%
Tennessee	0.02	0.09	300%	0.24	0.17	-30%
Texas	0.05	0.07	36%	0.32	0.19	-41%
SOUTHEAST AVG	**0.04**	**0.06**	**53%**	**0.23**	**0.27**	**19%**
3 REGION AVG	**0.18**	**0.25**	**36%**	**1.19**	**1.16**	**-2%**
Colorado	0.01	0.03	200%	0.07	0.11	57%
Idaho	0.00	0.01	100%	0.02	0.06	150%
Montana	0.02	0.00	-100%	0.12	0.06	-50%
Oregon	0.00	0.00	0%	0.00	0.00	0%
Washington	0.01	0.00	-100%	0.04	0.11	167%
Wyoming	0.01	0.00	-100%	0.05	0.07	40%
WEST AVG	**0.01**	**0.01**	**-25%**	**0.05**	**0.07**	**34%**
Alberta	0.05	0.07	31%	0.05	0.06	15%
British Columbia	0.01	0.01	-50%	0.00	0.00	0%
Manitoba	0.02	0.00	-83%	0.03	0.01	-71%
New Brunswick	0.00	0.00	0%	0.04	0.00	-100%
Nova Scotia	0.00	0.05	100%	0.00	0.00	0%
Ontario	0.00	0.01	50%	0.01	0.01	0%
Quebec	0.00	0.00	0%	0.00	0.00	-100%
Saskatchewan	0.14	0.04	-71%	0.06	0.04	-44%
CANADA AVG	**0.03**	**0.02**	**-25%**	**0.02**	**0.01**	**-39%**

and 1,407 P&Y bucks between 2007 and 2009 – numbers that most hunters would agree gives them a fair shot at killing a trophy; yet, Wisconsin hunters shot 443,345 antlered bucks during those years. That means on average, Wisconsin hunters tagged (and registered) one P&Y buck for every 315 bucks killed and one B&C buck for every 3,236 bucks shot! Even in the land of plenty, those are slim odds.

Although conventional wisdom dictates that because more record-book deer are killed in the agricultural areas of North America than anywhere else, it would stand to reason that these areas would be where the largest losses in trophy bucks would be located over the last 10 years; however, according to this data, the Northeast and Canada regions took the largest hit.

150 Grains of Salt

One thing to consider, putting all states or provinces in the same basket for comparative purposes is somewhat unfair when looking at national rankings based purely on raw B&C or P&Y data, because of the existence and varying degrees of popularity of state- or provincial-level record programs (agency-run or private) where whitetails exist. In fact, according to the Ohio DNR's Deer Project Leader Mike Tonkovich, between 2000 and 2009 the BBBC recognized 825 potential B&C qualifiers in their own record-book, which is 460 more than the B&C Club recorded (365) during the same time period. So, obviously, some areas may be underrepresented by national data.

Summary

Only time will tell if this recent lull in record-book bucks is temporary, or even if it's a false-positive masked by other variables. One thing is for sure, however, with the increasing popularity of QDM programs across the continent, today there are more hunters and landowners passing young bucks, manipulating habitat, and enjoying the fruits of their labor beyond the number of inches of whitetail antler grown. In fact, the standard of measure is gradually becoming a buck's age instead of his headgear; proven by new, innovative techniques to age bucks on the hoof like the computer software program www.Buckscore.com and others, and the growing interest in companies that offer cementum annuli tooth aging like www.DeerAge.com and www.Matsonslab.com.

Fortunately, your odds of tagging a record-book buck aren't limited to a just few areas today. When compared to 1999, hunters are shooting record-book bucks in many more states. They are also registering nearly equal numbers of P&Y bucks and over a third (+36 percent) more B&C bucks than a decade ago.

Opening Day Harvest

The opening day of firearms season is akin to a national holiday for many deer hunters across the U.S. and Canada. It's so popular in Pennsylvania that many public schools are closed so students (and teachers) can go hunting. The intensity of "opening day" from a participation and deer harvest perspective is often directly related to season length. Shorter seasons generally dictate increased hunter participation, higher "opening day" harvests, and a lot of excitement for sportsmen and women.

QDMA surveyed state and provincial wildlife agencies to determine the percentage of the total 2009 deer harvest that occurred on the opening day of the primary firearms season. The Midwest average was 15 percent and ranged from 5 percent in Nebraska to 29 percent in Minnesota. Nearly one in three deer shot in Minnesota throughout the entire season are taken on opening day. The North Star state led the country with this statistic, and it must be a fun place to be for the firearms opener. Wisconsin (23 percent), Indiana (19 percent) and Missouri (18 percent) hunters also tally large percentages of the total harvest on opening day.

Percentage of '09 Deer Harvest Taken Opening Day of Firearms Season.

State/Province	%
Illinois	14
Indiana	19
Iowa	7
Kansas	*
Kentucky	16
Michigan	*
Minnesota	29
Missouri	18
North Dakota	8
Nebraska	5
Ohio	13
South Dakota	*
Wisconsin	23
Midwest average	**15**
Connecticut	DNP
Delaware	8
Massachusetts	12
Maryland	13
Maine	9
New Hampshire	11
New Jersey	1
New York	18
Pennsylvania	18
Rhode Island	9
Virginia	4
Vermont	8
West Virginia	DNP
Northeast Average	**10**
Alabama	*
Arkansas	11
Florida	DNP
Georgia	*
Louisiana	*
Mississippi	*
North Carolina	6
Oklahoma	DNP
South Carolina	*
Tennessee	7
Texas	*
Southeast Average	**8**
New Brunswick	8
Nova Scotia	10
Ontario	*
Quebec	8
Canada Average	**9**

* data not available
DNP = data not provided

The Northeast average was 10 percent and it ranged from 1 percent in New Jersey to 18 percent in New York and Pennsylvania. These three states border each other, but the large difference in opening day harvest percentage is due to New Jersey hunters shooting a higher percentage of deer during archery season (44 percent of total harvest in 2009) than any other state or province. New York and Pennsylvania hunters are clearly focused on their states' firearms opener. Maryland (13 percent), Massachusetts (12 percent) and New Hampshire (11 percent) also shoot a lot of deer on opening day.

The eastern Canada average was 9 percent, with similar percentages in New Brunswick (8 percent), Quebec (8 percent) and Nova Scotia (10 percent). Hunters in these provinces produce similar numbers to their counterparts in neighboring states to the south (Maine, New Hampshire, and Vermont).

Finally, the Southeast average was 8 percent and ranged from 6 percent in North Carolina to 11 percent in Arkansas. Southeastern states tend to have much longer seasons than other regions and therefore a diluted opening day effect. As noted in the table, many states in the Southeast can't estimate the percentage shot on opening day.

Success on the opening day of firearms season varies widely by region. With the exception of Arkansas, southeastern openers can be a little quiet (and warm). Conversely, for some northeastern and especially some upper midwestern states the opening day of firearms season is downright exciting and one you surely don't want to miss.

Quotable QDMA:

The large difference in opening day harvest percentages in the Northeast is due to New Jersey hunters shooting a higher percentage of deer during archery season (44 percent of total harvest in 2009) than any other state or province.

Timing and Intensity of the 2010 Rut

Every hunter anxiously anticipates arrival of the breeding season in their area. The rut provides deer behavior and activity that can make even the most tenured whitetail hunter's heart race. With respect to breeding activity, 2010 was "business as usual" for some and anything but normal for others.

To analyze the relative timing and intensity of the 2010 rut, QDMA surveyed approximately 41,000 hunters in its database on November 24, 2010, and received responses from 4,557 (11%) by December 3. This was not a scientific study, but the data should provide a general index to what hunters across the whitetail's range experienced in 2010. Respondents listed the state they hunted and provided data on the number of rubs and scrapes they saw, the amount of rut activity (chasing, fighting and breeding) they witnessed, and the timing of rut activity relative to past years. This survey was especially interesting in 2010 as some hunters follow a lunar-based rut timing predictor (the most notable of which being Charles Alsheimer's and Wayne Laroche's). Mr. Alsheimer and Mr. Laroche predicted the "peak of the chasing phase," or what most hunters refer to as the rut, would occur in late November in the North (three weeks later than in 2009) with most breeding occurring in late November and early December. Aging fetuses from does harvested in winter and spring will identify the actual breeding dates for this fall, but while we're waiting for the official answer we'll use what a few thousand hunters saw as a preview.

We filtered the survey responses by region (see the map on this page), and some interesting trends quickly became apparent. **In the Midwest,** two thirds (67%) of the respondents saw about the same number or more rubs and scrapes as they normally do while a third (33%) saw less. Half (51%) witnessed less rut activity this year and half (49%) saw about the same amount or more. Most interesting, half (51%) reported the timing of rut activity was about the same as normal while 27% said it was late.

In the Northeast 62% saw about the same number or more while 38% saw fewer rubs and scrapes. Over half (53%) saw less rut activity while 46% saw about the same amount or more, and half (50%) reported the timing was about the same as normal while 27% reported it was late. Comparatively, responses from these two regions nearly mirror each other. The amount of rut sign was the same or more than normal for the majority, the amount of rut activity was the same or more than normal for half of the respondents, and the timing of activity was normal for half of the respondents. About a quarter of the respondents from each region said the rut was late, and one in five reported the rut was early in their area.

Responses from the **West** were similar to the Midwest and Northeast except a slightly higher percentage reported a later rut. An error in the survey template did not allow **Canada** hunters to identify their province so all were grouped into one region (Canada). A higher percentage (55%) of Canada hunters reported seeing fewer rubs and scrapes than normal; their views were consistent with those from the Midwest, Northeast and West regarding the amount of rut activity; and half reported a normal rut timing while over a third (37%) said it was late.

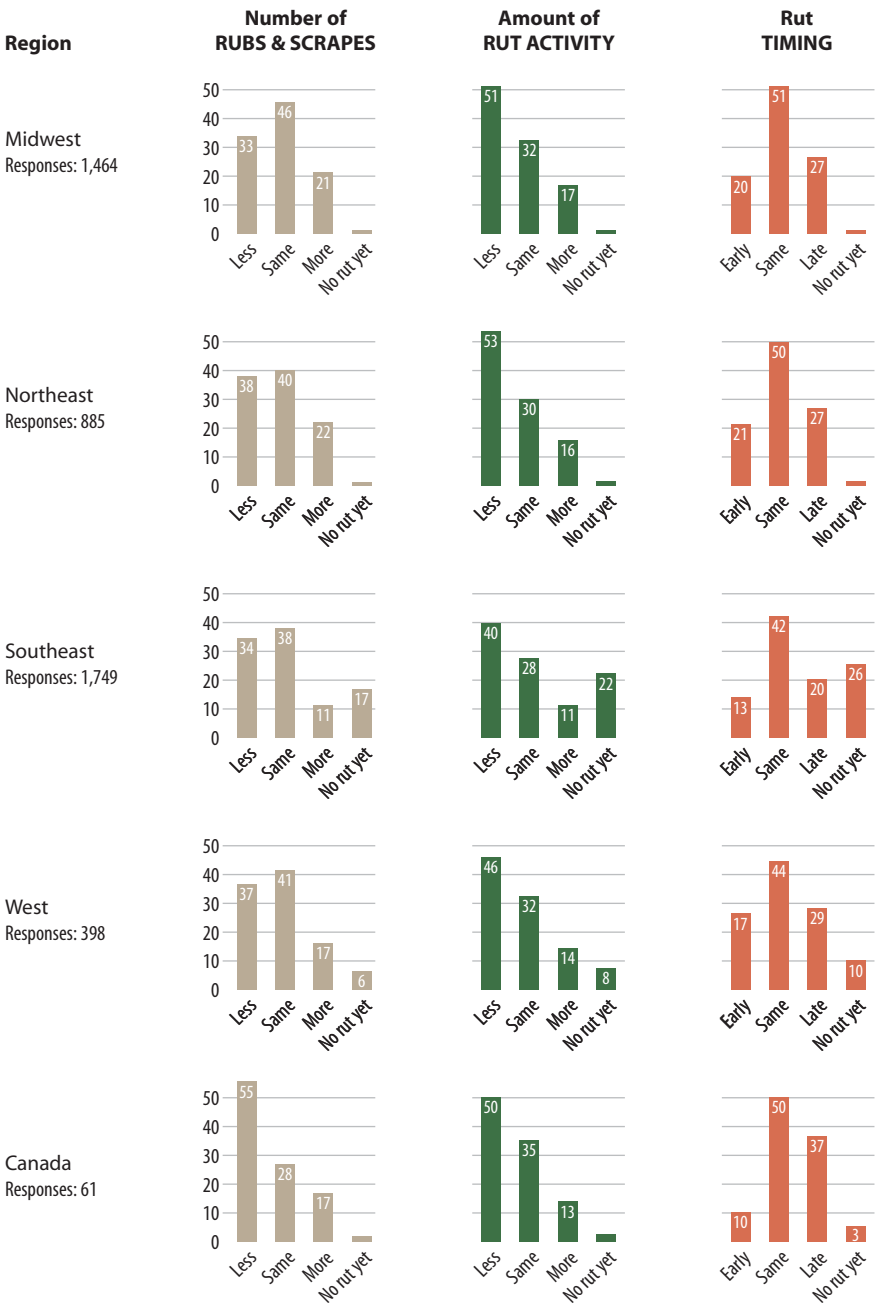
Data from the **Southeast** is understandably different from other regions. Deer herds in some areas of this region do not rut until December, January or even February, and our survey concluded on December 3. Depending on the question, 17 to 26% of the respondents answered the rut hadn't occurred in their area yet. For respondents whose rut had occurred, their responses were similar to other regions with respect to the amount of sign and activity observed as well as timing of the rut.

So, what's the consensus among hunters? The majority of hunters in the Midwest and Northeast said the rut was on time and they saw the same number or more rubs and scrapes but less chasing, fighting and breeding. The majority of hunters in Canada said the rut was on time but they saw fewer rubs and scrapes as well as less chasing, fighting and breeding than they normally do. Collectively the majority of northern hunters experienced

Quotable QDMA:

The majority of hunters in the Midwest and Northeast said the rut was on time and they saw the same number or more rubs and scrapes but less chasing, fighting and breeding in 2010.

a typical year, but personal messages from numerous survey respondents showed individual seasons ran the gamut from "no rut sign at all in my area" to "strongest rut I've ever seen." Many factors impact what we observe during the rut including the deer herd's adult sex ratio and age structure, density relative to the habitat's carrying capacity, weather, amount of hunting pressure, and likely other variables that we're not aware of or at least don't understand very well yet. Are lunar cycles responsible for cueing breeding in whitetails? The lunar-based model predicted the rut would be three weeks later in 2010 than 2009. Numerous scientific studies dispute this theory, as did the majority of respondents to the survey. This isn't to say that lunar cycles may not have some effect on deer behavior – just not on the actual timing of breeding. Fawns hitting the ground three weeks later than normal in 2011 would put them at a tremendous disadvantage.



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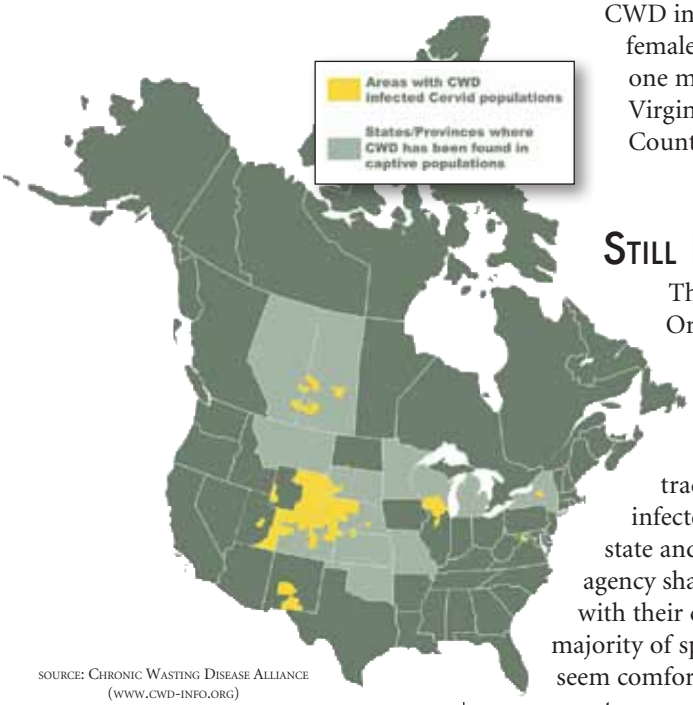
CWD Confirmed in Three New States in 2010

Chronic wasting disease (CWD) is an always fatal neurological disease that affects deer, elk and moose. There is no vaccine or cure for CWD, and this contagious disease can be spread via urine, feces, saliva, blood, and possibly other vectors. Following a quiet year in 2009 where no new states or provinces were added to the unfortunate list of those having confirmed the presence of this disease, Missouri, North Dakota and Virginia joined the list in 2010.

Virginia confirmed the presence of CWD in January 2010 from a female deer killed less than one mile from the West Virginia line in Frederick County in November 2009. Missouri was added in February when a captive white-tailed deer in Linn County inspected as part of the State's CWD surveillance and testing program tested positive. North Dakota followed in March when a mule deer harvested in western Sioux County during fall 2009 tested positive for CWD. These additions brought the total to 13 states and two provinces with confirmed CWD in wild cervid populations, and 11 states and two provinces with confirmed CWD in captive populations (see map from the CWD Alliance website).

See pages 17 to 19 in QDMA's 2009 Whitetail Report (www.qdma.com/media/) for additional information on the biology of the disease.



source: Chronic Wasting Disease Alliance (www.cwd-info.org)

Still No Evidence People Can Contract CWD

The World Health Organization and Centers for Disease Control and Prevention both state there is no evidence that humans can contract CWD from eating infected cervids. Nearly every state and provincial wildlife agency shares this information with their constituents, and the majority of sportsmen and women seem comfortable with this statement.

However, two abstracts from the recent International Prion Congress held in Salzburg, Austria challenged that statement. One study by researchers from the University of Texas Houston Medical School, Sanders Brown Center on Aging, University of Kentucky Medical Center, Case Western Reserve University, and the University of Chicago alleged "…that CWD prions have the capability to infect humans, and that this ability depends on CWD strain adaptation, implying that the risk for human health progressively increases with the spread of CWD among cervids." The second study by researchers from Case Western Reserve University stated, "… the species barrier from cervid to humans is prion strain-dependent and humans can be vulnerable to novel cervid prion strains."

News of these research projects spread quickly, but fortunately the truth in these statements isn't exactly as it appears. These abstracts were presented as "posters" (informational displays at the conference sharing updates about ongoing studies) rather than peer-reviewed papers. The researchers are reputable scientists and the research is valid, but their conclusions may be a little deceiving to the average sportsman. According to Matt Dunfee, CWD Alliance Coordinator, as he quotes prion biologist Dr. Jean Jewell of the Wyoming State Vet Lab: "It's one thing to show that a conversion to protease-resistance takes place in an artificial in vitro system, and quite another to suggest that CWD prions would cause a prion disease in humans if they were introduced by any natural route."

Wisconsin DNR

The bottom line is the above research

does nothing to show a relevant infectivity pathway from cervids to humans. So, can CWD infect humans? Not yet, and the science doesn't suggest it will anytime in the near future.

QDMA is helping in the fight against CWD by providing substantial funding to support a research project assessing the effects of deer population structure and dispersal on CWD control efforts. QDMA secured a $38,000 grant from the National Fish and Wildlife Foundation and the Help Budweiser Help the Outdoor's Program. Researchers from Texas A&M University-Kingsville and the West Virginia Division of Natural Resources will determine population structure and spatial scale of deer populations in the CWD-infected area of West Virginia, and assess dispersal and connectivity among those deer herds. They will also assess the role of habitat and landscape features in animal movements and dispersal patterns. The research project is a genetic study of white-tailed deer and should provide essential knowledge to guide national CWD management efforts.

Dr. Terry Kreeger, Wyoming Game & Fish Dept.

Much of the spread of CWD has been associated with captive elk and deer transported within the deer farming industry. This is why, in our 2010 Whitetail Report, QDMA called for deer farms to be administered by state and provincial wildlife agencies – not departments of agriculture (as in most states).

Quotable QDMA:

QDMA is helping in the fight against CWD by providing substantial funding to support a research project assessing the effects of deer population structure and dispersal on CWD control efforts.

Hunter Access

Despite numerous, substantiated accounts of modern human population growth and land fragmentation, hunter access has, in reality, been an issue for several decades. In fact, the age-old proposition of providing access for the nation's outdoorsmen and women was eloquently addressed in 1949 by Aldo Leopold in his epic *A Sand County Almanac*: "Recreational development is a job not of building roads into lovely country, but of building receptivity into the still unlovely human mind."

Perhaps no other entity has done more in recent years to reveal and analyze the issues related to hunting access than Responsive Management. In conjunction with the National Shooting Sports Foundation (NSSF) and various state and federal wildlife agencies, Responsive Management has conducted countless in-depth surveys on this topic. In general, their research has shown that aside from the inadequate number and acreage of hunting properties, problems among the hunting fraternity are often family related, including a lack spare time, economic constraints, and a lack of hunting areas close to home.

Big Game Hunting on Private and Public Properties

Most big-game hunting in the United States occurs on private lands. In 2006, 80 percent of big-game hunters hunted private lands compared to 35 percent who hunted public lands (some hunted both private and public lands). A mere 16 percent of big-game hunters claimed to have hunted only on public lands. This disparity between the two groups likely is greater for white-tailed deer than for western big-game species, given the decreased availability of public land in the eastern United States. In addition, some western states such as Idaho, Kansas, Utah, and Wyoming, wildlife agencies compensate landowners for providing free public access for hunting. Although these programs have opened millions of acres of private land to hunting in the West, similar programs remain uncommon in the eastern United States where most whitetail hunting occurs. Likely causes include smaller average property size, increased private ownership of hunting lands, and higher hunter densities.

Difficulties of Gaining Access to Specific Hunting Properties

Gaining access to private lands that are not leased or otherwise hunted is a significant challenge. This is especially true for lands owned by individuals rather than

corporations, as hunters have reported experiencing greater difficulties securing access to these lands. Many landowners cite poor hunter behavior, safety, and liability as reasons they do not allow hunting. When combined with declining awareness of and participation in hunting, it is not surprising that an increasing number of properties feature "posted" or "no hunting" signs on trees, fences, and gates. This trend could be ameliorated or even reversed through hunter education programs sponsored by state and federal agencies and non-government sportsmen's organizations. A list of current state hunter access programs can be found on The Wildlife Society's website (visit www.wildlife.org and search for "state hunter-access").

Methods of Enhancing Hunter Access

Hunter and landowner education and outreach programs should emphasize safety and promote ethical hunting behavior to improve access for deer hunting and management. Establishment of more comprehensive landowner liability laws would facilitate these efforts. While many states have statutes that shield landowners from civil liability from hunting-related activities, most do not apply if the landowner receives compensation for hunting (e.g., lease or commercial hunting operation) and none cover legal defense costs. Thus, even in states with strong liability laws, an increasing number of landowners and hunters are purchasing specialized insurance that provides comprehensive liability coverage for hunting-related activities.

Hunting Leases

Landowner compensation through hunting leases has become a common access strategy, especially in the southern United States. Hunting leases can be controversial and often are cited by hunters as a barrier to access. However, as of 2006, only 6.9 percent of hunters in the United States leased land for hunting. Moreover, the number of hunters leasing land declined 14 percent from 2001 to 2006. This trend was also reflected in the area leased, which declined 4 percent from 2001 to 2006. Possible reasons for the decline include increasing land ownership among hunters, loss of hunting lands to alternative land uses, and the divestiture of millions of acres of timberlands in the southern United States by the forest products industry during the late 1990s and early 2000s.

Hunter involvement in leases varies considerably by region and is inversely related to availability of public land. For example, less than 5 percent of hunters lease land for hunting in the Pacific and Mountain regions (western half of United States) compared to nearly 25 percent in the West South Central region (Arkansas, Louisiana, Oklahoma, and Texas). Lease participation also varies by preferred hunting method. Archery and muzzleloader hunters are more than twice as likely to lease land for deer hunting than rifle and pistol hunters (15.1 percent and 7.2 percent, respectively). Lease rates are influenced by numerous variables including property size and location, habitat quality, deer density, buck quality, availability of other game, proximity to metro areas, and land values.

When viewed in the context of hunter access, leasing is a double-edged sword. Leases provide financial incentives for landowners to open lands to hunting and security for participating hunters. They also provide opportunities for hunters to participate in management programs designed to improve deer quality and hunting experiences. Hunting effort is positively correlated with leasing. Those hunting deer more than 25 days annually are nearly three times as likely (17.4 percent) to lease land than those hunting six to 12 days (6.2 percent), and more than five times as likely as those hunting five days or less (3.2 percent). Therefore, regulations that institute longer hunting seasons may be tied to an increase in leasing as well.

Wildlife and habitat management on leased lands can lead to habitat retention and improvement, increased wildlife biodiversity, and enhanced hunter satisfaction. Leases also can result in reduced property damage by deer and improved property security, especially for absentee landowners. However, leases can displace local hunters and provide hunting opportunity to fewer hunters. In general, leasing is positively correlated with a hunter's age,

Quotable QDMA:

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Quotable QDMA:
The number of sportsmen owning land for outdoor recreation increased 56 percent from 1991 to 2006. This sharp increase has reduced the available acreage of leased and "open" land for hunting.

income, education, and population density of the hunter's residence. Consequently, leases may present barriers for hunters with lower levels of education or income and those residing in rural areas.

Recent Legislative Action to Enhance Hunting Access

At the first meeting of the newly-established Wildlife and Hunting Heritage Conservation Council in Washington, D.C., U. S. Agriculture Secretary Tom Vilsack announced on October 4, 2010 (USDA/Farm Service Agency – Release No. 0503.10) that 17 public access programs will receive grants totaling $11.8 million through the Voluntary Public Access and Habitat Incentive Program (VPA-HIP). The VPA-HIP provides an incentive for owners and operators of privately held farm, ranch and forest land to voluntarily provide hunters, anglers, hikers, bird watchers and other recreational outdoor enthusiasts access to land for their enjoyment. One of the stipulations of this program is that landowners will be expected to provide quality habitat on their properties to sustain wildlife and public utilization. The 17 states and their VPA-HIP grant amounts are shown on this page.

VPA-HIP Grants By State

Arizona	$600,000
Colorado	$445,318
Idaho	$400,000
Illinois	$525,250
Iowa	$500,000
Kansas	$1,500,000
Kentucky	$651,515
Minnesota	$582,367
Nebraska	$1,091,164
North Dakota	$300,000
Oregon	$786,795
Pennsylvania	$1,500,000
South Dakota	$558,325
Utah	$84,837
Washington	$836,999
Wisconsin	$936,040

Some of these states are developing new programs whereas others are enhancing existing public access and habitat incentive programs (e.g., Conservation Reserve Enhancement Program, or CREP lands). This program is a milestone in the endeavors of many to provide access to private lands across the nation. Expansion of this much needed program undoubtedly will enhance the opportunities for outdoor recreationalists. Important as it is though, there remains a need for the provision of access to hunting properties, on public and private lands, for big game hunters, and specifically for deer hunters.

Summary

Land ownership patterns have changed more in the last 10 years than in the previous 20 or more. The number of sportsmen owning land for outdoor recreation increased 56 percent from 1991 to 2006. This sharp increase has reduced the available acreage of leased and "open" land for hunting. Severe budget cuts in state and federal wildlife agencies, particularly in the last two years, have had a deleterious effect on the services provided to hunters. These strained budgets have affected the amount and quality of hunting lands available to the public. Our society is becoming more litigious each year and landowners will continue to face challenges with regard to the liability of leasing their lands or simply allowing hunter access. However, recent and proposed legislation are expected to solve some of the hunter access dilemmas.

Given current trends, it is likely that social, economic, and legal barriers will make accessing private land for hunting more difficult and costly in the future. Hunters should be encouraged to support legislative actions to strengthen hunting programs at the state and national levels, even if hunting license fees are increased as a result. At today's prices, the cost of hunting licenses is still the best return on the dollar for the enjoyment and other benefits provided. Educational programs designed for hunters and landowners alike will become increasingly important in ensuring hunter access to quality private and public hunting lands in the future.

Surge in Youth Hunter Numbers

From 1996 to 2006, the number of hunters 16 to 24 years old declined from 2.1 to 1.5 million, and the decline was most noticeable in states with restrictive regulations or laws governing youth hunter participation. Fortunately, in 2004 the National Shooting Sports Foundation, U.S. Sportsmen's Alliance, and the National Wild Turkey Federation launched the Families Afield Initiative (http://familiesafield.org/) which encouraged state wildlife agencies to eliminate hunter age restrictions and ease hunter education requirements. Families Afield is an education and outreach program to help states create hunting opportunities for youth so more families may enjoy America's greatest outdoor tradition together. According to the Families Afield website, research shows that states without these prohibitions are recruiting more youths into hunting. Mentors instill the passion early, bonding families, increasing attendance in hunter education classes, strengthening support and participation for the future, and doing so safely.

It's Working

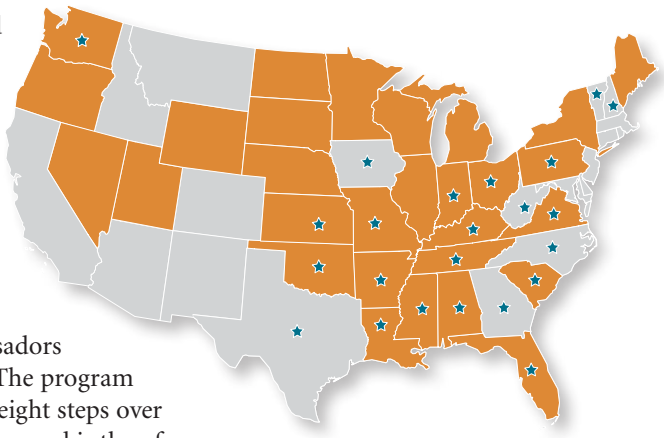
As of 2010, Families Afield legislation had been passed in 29 states with 388,000 apprentice licenses sold (see the map on this page). Many states have also implemented special youth hunting seasons with much success.

National Archery in the Schools Program

Another noteworthy initiative is the National Archery in the Schools Program (NASP) launched in Kentucky in 2003 (http://www.nasparchery.com/activea.asp). This program teaches target archery to students in grades 4 to 12. According to Tom Bennett from NASP, by 2010 the program had expanded to more than 5,500 schools throughout the United States and Canada and now reaches more than 1.2 million students annually. The NASP is not a hunter recruitment program, but surveys revealed that more than 50 percent of its participants expressed interest in hunting after taking the course.

QDMA's Mentored Hunting Program

A final initiative is QDMA's Mentored Hunting Program (http://www.qdma.com/programs/hunting-heritage/become-a-mentor/). This 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 (youths and adults) the importance of hunting and provides them with a greater understanding of the role of hunting in sustainable wildlife management. It also builds the foundation for these hunters to become better stewards of our natural resources and better ambassadors for hunting. The program incorporates eight steps over several months, and is therefore expected to be far more effective than traditional "one-time" events designed to expose newcomers to hunting.



Twenty-nine states (shown in color) have passed legislation lowering barriers to hunting since the Families Afield program was launched.

★ Families Afield Partners Designation of "Least Restrictive States"

A Bright Future

Collectively, these and other programs are making a difference. U.S. Fish and Wildlife Service (FWS) surveys show hunter participation data for 6- to 15-year olds declined from around 2 million in 1980 to 1.7 million in 1995, and then increased to nearly 1.8 million by 2005. Given the above programs were implemented in 2003 and 2004, sportsmen and women have much to be encouraged about as the next FWS hunting participation survey (scheduled for 2011) should acknowledge a significant increase in youth hunting rates. If realized, that would cast a bright light on the future of hunting in North America.

Quotable QDMA:

Fifteen states reported their maximum whitetail harvest occurred within the last five deer seasons. Five states – Indiana, Maryland, Ohio, Virginia and Wyoming – even set their record harvest in 2009.

Deer Season

Late November means deer season for many across the whitetail's range. Opening day of rifle season in Pennsylvania (the Monday after Thanksgiving) rivals Christmas and the last day of school as the most important day of the year. However, deer season means different things to different hunters, and in different states and regions. Here's a look at some interesting trends in deer seasons and harvests across portions of the whitetail's range.

Seasons Change

Has hunting changed in the past decade or two? Absolutely. Deer managers and hunters know far more today about whitetails than ever before. New technology such as GPS radio collars, DNA analysis, and trail-cameras provide numerous insights into whitetail biology and ecology that past researchers could, at best, merely speculate about. Importantly, technology such as the Internet allows this knowledge to be shared with nearly all sportsmen and women. Finally, state and provincial wildlife agencies, universities, and groups like QDMA conduct thousands of educational events annually to provide this information to sportsmen and women. The bottom line is that deer managers and hunters today are far more knowledgeable on deer and habitat biology and management than our predecessors.

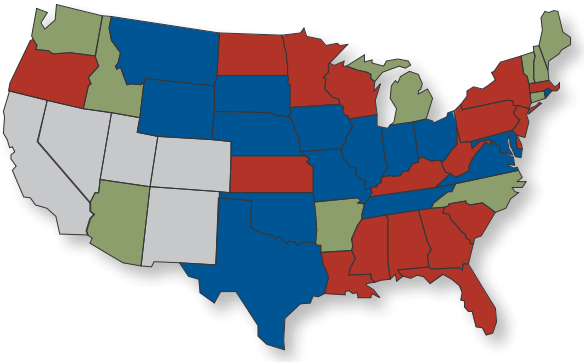
Hunting has changed in other ways, too. There are fewer hunters today, and more land is off limits to hunting as a result of urban and suburban expansion. Contrary to this, current seasons and bag limits are much more liberal in most states than they were a decade or two ago. In fact 15 states reported their maximum whitetail harvest occurred within the last five deer seasons (see the map on this page). Five states – Indiana, Maryland, Ohio, Virginia and Wyoming – even set their record harvest in 2009. Another 18 states recorded their record harvest from six to 10 years ago. That leaves only 10 states that haven't set their record harvest within the last decade, and most of these are at the periphery of whitetail range and/or they experience severe environmental extremes.

The Granite State

A case in point is New Hampshire, as it is near the northeastern limit of the whitetail's range and experiences severe winters on a fairly frequent basis. We're referring to truly severe winters from a deer perspective – and moose for that matter – where extended periods of deep snow and cold temperatures can cause 20 to 25 percent of the herd to succumb to the elements. New Hampshire essentially grew its deer herd from the early 1930s to the late 1950s. It declined for a couple of years and then peaked in 1967. A series of severe winters followed, and the population trended downward for about a decade and then grew from the early 1980s through 2007 until back-to-back severe winters knocked it down again. The point is that it is not surprising most New England states set their record harvest more than 10 years ago while the majority of states have set more recent records.

Last Occurrence of a Record Whitetail Harvest

(Data from individual state wildlife agencies)



- Record whitetail harvest level set in last five seasons (2005-2009).
- Record whitetail harvest occurred 6 to 10 years ago (2000-2004.
- Record whitetail harvest occurred prior to 2000.
- No whitetail harvest, or data not available.

Harvest Numbers

Speaking of harvests, it is mind boggling to think of the number of deer taken each year during hunting season. In 2009, approximately 6.5 million whitetails were harvested in the United States. That's a lot of venison and wholesome meals, and antlerless deer accounted for approximately 55 percent of the total. As managers, we did a good job shooting more antlerless deer than antlered bucks. However, it wasn't always that way. Ten years ago in the 1999 season, hunters shot a nearly identical number of deer (6.5 million) and just over 50 percent were antlerless. That year marked a major milestone as it was the first time hunters took more antlerless deer than antlered bucks. This is something hunters should be very proud of, and it marked a major change in deer hunting and management programs. Going back two decades to the 1989 season showed hunters took just under 4.9 million deer; 33 percent fewer than in 1999 or 2009; and only 45 percent of the 1989 harvest was comprised of antlerless deer. A "buck-only" culture was still firmly entrenched in many areas and deer herds were rapidly expanding.

Bigger in Texas (Maybe)

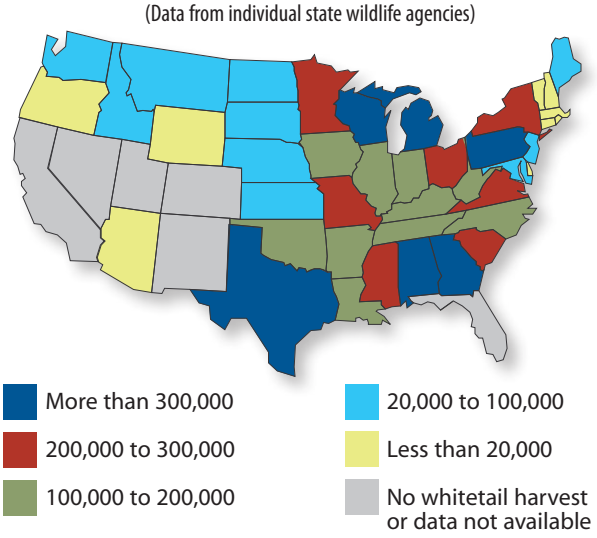
Which state has the all-time record harvest? The Lone Star State tops the list with 619,650 whitetails in 2008. In fact, Texas has eight of the top 10 largest whitetail harvests. Wisconsin holds the number two spot with 618,274 deer in 2000, and Michigan has the number 10 spot with 544,895 whitetails in 1999. The corresponding map on this page shows states whose average harvest over the past five seasons falls into one of five categories: less than 20,000; 20,000 to 100,000; 100,000 to 200,000; 200,000 to 300,000; and more than 300,000 deer. Amazingly, six states reached the top category, and, with the exception of Texas, these states are comparable in size to many other states. However, some small states kill a significant number of deer. Maryland is less than a quarter the size of Georgia or Pennsylvania (two states in the top harvest category), yet its hunters harvest more than a quarter as many deer as are taken in the Peach or Keystone State. On a per-acre basis, Maryland tallies more deer than Georgia and Pennsylvania.

Staying the Same

Deer hunting has experienced many changes in the past 20 years, but several important pieces remain unchanged for some. Thanksgiving weekend you'll find Pennsylvania hunters at their camps enjoying the approach of rifle season with their closest friends. Wood smoke, camp food and card games are as much a part of the deer-season experience for some today as they were 20 and 30 years ago. Many of the guys sitting around the tables have changed, but we can assure you their passion for whitetails and deer season has not.

Average Annual Whitetail Harvest for '05-'09 Seasons

(Data from individual state wildlife agencies)



Quotable QDMA:

Some small states kill a significant number of deer. Maryland is less than a quarter the size of Georgia or Pennsylvania (two states in the top harvest category), yet its hunters harvest more than a quarter as many deer as are taken in the Peach or Keystone State.

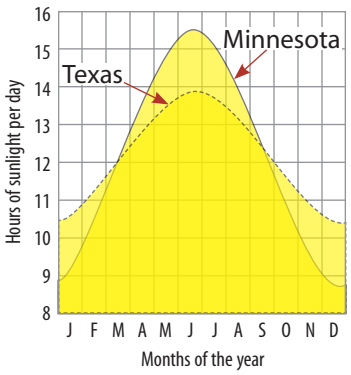
Quotable QDMA:
Whitetails are rutting somewhere in the United States from August through February. Amazingly, they breed over this seven-month period just in the state of Florida!

Got Rut?

Fall signifies the rut is near, right? Well, for some deer managers that's true, but for others the rut is nearly over. In fact, whitetails are rutting somewhere in the United States from August through February. Amazingly, they breed over this seven-month period just in the state of Florida! Designing a hunting season around the rut may be relatively simple in states with a consistent breeding season, but doing so in a state that varies as widely as the Sunshine State can get complicated.

Photoperiod

Photoperiod is the interval in a 24-hour period during which a plant or animal is exposed to light. Photoperiod is directly tied to growth, development, and seasonal behaviors in plants and animals. With respect to whitetails, photoperiod regulates some hormonal production that is directly tied to antler growth and the breeding season. A diminishing ratio of daylight to darkness triggers behavioral and physiological changes that lead to breeding. First, antlers mineralize and bucks shed their velvet. Next, bucks begin sparring, rubbing trees, and making scrapes. This transitions to some fighting to establish dominance and breeding rites and eventually to breeding. Finally, an increasing ratio of daylight to darkness triggers antler shedding, and a new cycle begins.



In northern regions, photoperiod is a much more precise timer of breeding dates in deer. One likely explanation is northern regions have a wider range of daylight lengths from summer to winter than southern regions.

Rut Factors in the North

In northern regions photoperiod is a much more precise timer of seasonal changes. This is likely due to: 1) northern regions having a wider range of daylight lengths from summer to winter (see the graph) than southern regions, and 2) climate being critically important for doe and fawn survival. Does bred on time put little energy into fetal development during winter when nutrition is most limiting (energy demands are highest for the doe during the final stages of the pregnancy). Their fawns are born into a favorable environment from a temperature, cover, and forage perspective, and fawns are allowed maximum time to grow before the onset of the next winter. This also allows does to recover body condition and build the necessary fat reserves for breeding and winter survival. Does bred later have fawns later, thus they have a shorter growing season and the doe has less time to prepare for breeding and winter. Breeding earlier than the optimal time can cause even bigger problems. The doe may be forced to provide abundant resources to the growing fetus before Mother Nature has made them available to her. This can result in reduced doe health which may predispose her to predation, disease, or other mortality. It can also result in increased fawn mortality. The bottom line is northern whitetails have a narrow breeding window to optimize doe and fawn health and survival. This is why numerous studies across the northern United States and Canada looking at conception dates show very little year-to-year variation. In fact, these breeding dates are amazingly consistent from year to year – regardless of moon phase, weather patterns, or other variables. This is not to say these variables don't affect deer movement patterns. They may, but they haven't been shown to affect breeding dates (see page 18).

Rut Factors in the South

In southern regions, breeding dates aren't as cut-and-dry. The photoperiod change is less dramatic, the climate is less severe, and there is less need to breed

Deer movements and rut activity levels can fluctuate with local conditions like weather and heavy acorn crops, but actual breeding dates are amazingly consistent from year to year in any given location – regardless of moon phase or weather patterns. QDMA member John Durling of New York got close to capturing actual breeding in this series of trail-camera photos, taken over a six-minute period from 4:37 to 4:43 a.m. on November 25, 2009, showing a buck tending an apparently receptive doe.

"on time." This may explain why the breeding window is wider, but it likely does not explain why some deer herds in central Florida have peak breeding in September while others peak one to three months later. Or – as Dr. Karl V. Miller presented at the 2010 QDMA National Convention – why published reports show peak breeding in October in east Texas, December in Arkansas, January in Mississippi and Alabama, February in the Florida panhandle, and October in southeast Georgia. All of these regions share a similar photoperiod, so there are clearly some other factors involved. According to Dr. Miller, southern deer are still under the influence of photoperiod, but exact timing of the rut is more influenced by genetics and maternal factors, and the synchrony of the rut is more influenced by herd demographics. This means photoperiod controls the approximate season of breeding (fall or winter), but the deer herd's genetics likely influence the exact timing of breeding. The synchrony or "tightness" of the rut is then governed by how well the herd is managed. Herds with balanced sex ratios and age structures have "tighter" or more synchronous ruts, which leads to increased rutting behavior, competition for breeding, and enhanced hunting opportunities. Poorly managed herds with unbalanced sex ratios and young buck age structures generally lack these benefits.

Got Rut?

Back to the original question. Fall is an exciting time for northern managers. Leaves are changing color, there's a crisp in the air, and the most exciting time in the whitetail's year is arriving. For some southern managers the rut has passed, for others it's just around the corner, and still for others it's a few months away. Regardless of where you reside in the whitetail's range or when your rut occurs, it's nice to know you have the ability to improve the health of the deer herd and especially your hunting opportunities by practicing Quality Deer Management.

Venison Donation Programs

Quotable QDMA:

The top five states in venison donation (in pounds) during the 2009-2010 hunting season include Virginia, Iowa, Missouri, Wisconsin, and Texas. There is no correlation with the total poundage of donated venison and a state's deer density; rather it appears to be a function of the number and availability of venison programs in each state.

Hunters have been sharing their venison with family, friends, and neighbors for years. Fortunately, beginning in the 1990s, organized programs started to become available to handle hunter donated venison and provide it to needy individuals.

Today there are literally hundreds of venison donation programs in existence, and the National Rifle Association's Hunters for the Hungry Information Clearinghouse (www.nrahq.org/hunting/hungry_nat_list.asp) maintains the records of donated hunter-harvested meat, primarily from white-tailed deer, on an annual basis. All but six states (Hawaii, Massachusetts, Nebraska, New Mexico, Vermont, and Wyoming) operate venison donation programs, and there is a program in the Canadian Province of Nova Scotia. In the 2009-2010 hunting season a minimum of 2,603,262 pounds of hunter donated meat was provided for the needy across North America. This translates to 10,445,512 meals! Elk, moose, antelope, pheasants, and waterfowl were included in this total, but the bulk of the meat was from whitetails (see the summary chart on the facing page, courtesy of the NRA).

The top 5 states in venison donation (in pounds) during the 2009-2010 hunting season include Virginia (405,340), Iowa (300,000), Missouri (252,000), Wisconsin (176,445), and Texas (167,840). An individual deer will produce an average of 50 pounds of ground venison and will provide 200 meals. There is no correlation with the total poundage of donated venison and a state's deer density; rather it appears to be a function of the number and availability of venison programs in each state.

More Than Just a Name

Venison donation programs, as many as six in some states, are known by a variety of names (e.g., Sportsmen Against Hunger, Hunters for the Hungry, Hunters Helping the Hungry, and Hunters Sharing the Harvest). These venison donation programs are cooperative efforts among hunters, farmers, sportsmen's associations, meat processors, state meat inspectors, and hunger relief organizations to provide quality, high-protein, and low-fat wild game meat for the needy. Most states (33 total) have statewide programs where others only provide venison donation services in particular regions. For example, in Oregon the Sportsmen Against Hunger program serves only the Portland area.

An Expensive Process

Funding for venison donation programs comes from a variety of sources including individuals, churches, civic groups, hunt clubs, outdoor organizations, businesses, foundations, corporations, and local fundraising events. In some states the donation of an entire deer carcass is at no cost to the hunter; processing and distribution are completely funded through donations. The processing fee is usually $50 per animal. Hunters in other states pay the processing fee, which is tax deductible as a charitable contribution to a non-profit organization. Some states (e.g., Virginia and Wisconsin) have an optional venison donation fee of $1 or $2 at the time of license purchase, whereas some states (e.g., Illinois and Iowa) include a $1 or $2 surcharge for venison donation in the license fee.

X-Ray Vision in the Future?

Although reports of lead in hunter-donated venison were determined by the Centers for Disease Control (CDC) to be of unfounded concern (see page 12 in QDMA's 2009 Whitetail Report), the Minnesota Department of Agriculture recently changed the requirements for their venison donation program. All firearm-harvested venison must be held and x-rayed for possible presence of lead fragments. Any package(s) found to contain lead will be destroyed. Approved packages of venison will be returned to the food bank for distribution. Venison that is harvested by archers will not be required to be held or x-rayed.

Conclusion

Burgeoning whitetail populations in many regions of the Nation have resulted in surplus venison. In recent years many state wildlife agencies have liberalized

STATE OR PROVINCE	GROUP	LBS. OF GAME MEAT DONATED	NUMBER OF MEALS SUPPLIED	AREA COVERED
Alabama	Hunters Helping the Hungry	44,156	176,624	Statewide
Alaska	Hunters for the hungry	Totals not available		
Arizona	Farmers and Hunters Feeding the Hungry	3,136	12,544	Statewide
Arkansas	Farmers and Hunters Feeding the Hungry	68,000	272,000	Statewide
California	Farmers and Hunters Feeding the hungry	6,350	25,400	Statewide
Colorado	Farmers and Hunters Feeding the Hungry	5,410	21,640	Statewide
Connecticut	Hunt to Feed	4,000	16,000	Statewide
Delaware	Delaware Sportsmen Against Hunger	30,000	150,000	Statewide
Florida	Farmers and Hunters Feeding the Hungry	1,034	4,136	Statewide
	N. FL Sportsmen Against Hunger	750	3,000	Northern Florida
Georgia	Georgia Wildlife Federation	29,833	119,332	Statewide
	GA Farmers and Hunters Feeding the Hungry	5,860	23,440	Statewide
Idaho	Treasure Valley Sportsmen Against Hunger	3,000	12,000	Treasure Valley
Illinois	Sportsmen Against Hunger	101,000	405,600	Statewide
	Farmers and Hunters Feeding the Hungry	5,951	23,804	Statewide
Indiana	Farmers and Hunters Feeding the Hungry	91,924	367,696	Statewide
Iowa	Iowa DNR: Help us Stop Hunger	300,000	1,200,000	Statewide
	Farmers and Hunters Feeding the Hungry	8,995	35,980	Statewide
Kansas	KS City Sportsmen Against Hunger	4,500	18,000	Statewide
Kentucky	Hunters for the Hungry	91,000	364,000	Statewide
Louisiana				
Maine	Sportsmen Against Hunger	739	2,956	Statewide
Maryland	Farmers and Hunters Feeding the Hungry	144,350	577,400	Statewide
Michigan	Michigan Sportsmen Against Hunger	32,800	131,200	Statewide
	Farmers and Hunters Feeding the Hungry	1,550	6,200	Statewide
Minnesota	Hunters Against Hunger	400	1,600	Statewide
Mississippi				
Missouri	Share the Harvest	213,000	852,000	Statewide
	Sportsmen Against Hunger	24,013	96,052	Statewide
	Farmers and Hunters Feeding the Hungry	350	1,400	Statewide
Montana	Farmers and Hunters Feeding the Hungry	1,450	5,800	Jefferson and Yellowstone
Nebraska	Deer Exchange Program	2,797	11,188	Statewide
New Hampshire				
New Jersey	Hunters Helping the Hungry	15,020	60,000	Statewide
New York	Food Bank of Central NY	1,500	6,000	North Central
	Hunters Helping the Hungry	700	2,800	Statewide
	New York Conservation Council	8,067	32,268	
North Carolina	Sportsmen Against Hunger	100	400	Statewide
	Farmers and Hunters Feeding the Hungry	7,873	31,492	Statewide
North Dakota	Sportsmen Against Hunger	15,885	63,540	Statewide
Ohio	Farmers and Hunters Feeding the Hungry	122,221	488,884	Statewide
	OH Association of Second Harvest Food Banks	57,989	231,956	Statewide
	Sportsmen Against Hunger	1,515	6,060	Central
Oklahoma	Hunters Against Hunger Sportsmen Against Hunger	39,765	160,000	Statewide
Oregon	Sportsmen Against Hunger	40	160	Portland
Pennsylvania	PA Hunters Sharing the Harvest	52,000	208,000	Statewide
	Farmers and Hunters Feeding the Hungry	705	2,820	Bucks, Dauphin, Lancaster, Wash.
Rhode Island	Hunters and Fishermen for the hungry	Total not available		
South Carolina	SC Hunters & Landowners for the Hungry	25,200	100,800	Statewide
	Farmers and Hunters Feeding the Hungry	3,516	14,064	Statewide
South Dakota	Sportsmen Against Hunger	97,752	391,008	Statewide
Tennessee	Hunters for the Hungry	100,000	400,000	Statewide
	Farmers and Hunters Feeding the Hungry	3,755	15,020	Mtg. Shelby & Trousdale
Texas	Hunters for the Hungry	167,840	671,360	Statewide
	Farmers and Hunters Feeding the Hungry	18,700	74,800	Statewide
Utah	Utah Sportsmen Against Hunger	650	2,600	Statewide
	Farmers and Hunters Feeding the Hungry	3,030	12,120	Statewide
Virginia	Hunters for the Hungry	405,340	1,621,360	Statewide
Washington	Sportsmen Against Hunger	1,300	5,200	Statewide
West Virginia	Hunters Helping the Hungry	50,007	200,028	Statewide
Wisconsin	Wisconsin Deer Foundation	176,445	705,780	Statewide
Totals		2,603,263	10,445,512	Nationwide

Source: National Rifle Association's Hunters for the Hungry Information Clearinghouse

season lengths and bag limits in an effort to curtail or reduce deer numbers. Therefore, many hunters acquire enough venison to fill their freezers while there are still opportunities to harvest more deer. The venison donation programs provide a valuable service to handle the surplus venison. In addition to the venison provided through traditional hunting, venison donation programs receive deer harvested on state-regulated, special damage permits and from municipal deer management programs. Side benefits can include reduced deer/vehicle collisions, crop damage, landscape damage, deforestation, and the incidence of tick-borne diseases.

The QDMA has encouraged its nearly 180 Branches to support venison donation programs in their respective areas or neighborhoods. It is hoped that our involvement in this invaluable effort will dramatically increase the availability of quality venison to the needy.

Cyber Deer

As a hunter, what is the best way to gain access to a piece of property? By demonstrating you are knowledgeable about the game you're pursuing, ethical in your actions, and safe and proficient with your sporting arm or bow. Today's society has less tolerance for irresponsible hunters, and many landowners have less tolerance for irresponsible hunters. Fortunately, the Cyber Deer training tool can take new and experienced hunters to another level.

Overview

Cyber Deer is the most advanced deer anatomy and shot placement tool available. It was created to train new and experienced hunters about organ and skeleton locations and proper shot angles for deer. Cyber Deer is a computer-generated hunter education software package. It is not a video game, but it is a fantastic tool for any hunter to practice effective shot choices or re-create a real hunt from the past.

Cyber Deer users can simulate both ground and tree stand hunting scenarios by selecting different distances and heights from the target – a mature whitetail buck. Users can also select to use a rifle or bow, and the software will account for appro-

Quotable QDMA:

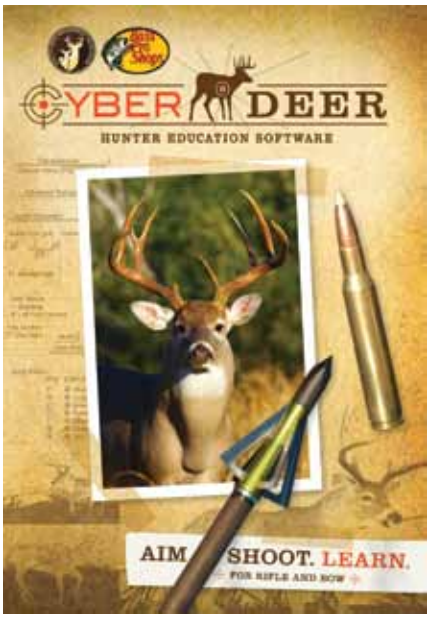
Cyber Deer is a great training tool, and it is currently being used by hunters and hunter education instructors across the whitetail's range. It is also used in the Archery Trade Association's Explore Bowhunting educational program.

Users of Cyber Deer can "shoot" a deer from unlimited angles and heights, using a virtual rifle or bow, and then analyze the shot to see the results. With the shot path visible, the user can remove layers to see how the particular shot affected intenal organs. The user can continue to rotate or zoom in on the deer to study shot effectiveness.

priate shot angles and placement by weapon type. Users can rotate the deer and receive instant feedback on shot angles before the shot. Users can then "shoot" the deer and receive advice on their shot attempt and shot placement. The user also receives feedback on what their shot hit, and the path of the shot remains on the screen to assess the shot and provide training opportunities. Cyber Deer can also be shared with groups by using a PowerPoint projector, making it a great tool for teaching new and experienced hunters about effective shot choices.

Taking a Shot

After users select their weapon of choice (rifle or bow), they can rotate the deer to simulate various shot angles. A color bar and comments appear on the top of the screen describing when the deer is at a "great," "good," or "too narrow" of an angle for a recommended shot. This is the first training opportunity. Next, the user positions the sight on the deer and shoots.



Evaluating the Shot

Users can view a description of the shot. Each shot receives an attempt rating (recommended or not recommended) based on placement of the sight with respect to the deer's position relative to the hunter. This is the second training opportunity. Each shot also receives a shot rating (great, good or poor) based on what the shot hit. This is the third training opportunity. Users can view the parts of the deer hit by the shot (heart, lungs, liver, diaphragm, rumen, skeleton and skin), and they can remove the skin, skeleton and/or specific organs to view how the shot entered and exited the deer. Users can also zoom in or out and rotate the deer to view the shot from multiple angles.

Other Controls

After assessing the shot, users can reload and shoot the deer again, assess the shot, reload, etc. Users can select to shoot a walking or standing deer and see how proper shot placement changes based on position of the front leg. They can also adjust the hunter's height (0 to 50 feet above ground) and distance from the deer (7 to 50 yards). Finally, users can select one of four preset deer views (full, x-ray, bone and organ; see screen-shots on the facing page).

Cyber Deer is a great training tool and it is currently being used by hunters and hunter education instructors across the whitetail's range. It is also used in the Archery Trade Association's Explore Bowhunting educational program. It is QDMA's goal to have a copy of Cyber Deer in every deer camp, hunt club and hunter education program in North America. Cyber Deer can 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.

Visit https://www.qdma.com/store/details.asp?id=340&catid=6&catname=DVDs, Videos to obtain a copy of Cyber Deer.

STATE	PRICE ($)
CT	41.00
ME	25.00
MA	32.60
NH	22.00
NY	50.00
RI	42.50
VT	37.00
Northeast Average	**35.73**
AL	24.00
AR	25.00
FL	22.00
GA	19.00
LA	39.50
MS	33.85
NC	25.00
SC	18.00
TN	56.00
Southeast Average	**29.15**
CO	34.00
ID	50.75
MT	21.00
NV	78.00
UT	46.00
WY	71.50
West Average	**50.21**
AK	25.00
CA	68.75
HI	10.00
OR	42.00
WA	39.42
Pacific Average	**37.03**
DE	35.00
MD	30.50
NJ	31.50
PA	36.00
VA	54.00
WV	33.00
Mid-Atlantic Average	**36.67**
IL	44.00
IN	24.00
IA	60.50
KS	52.30
KY	50.00
MI	15.00
MN	26.00
MO	19.00
NE	50.00
ND	34.00
OH	43.00
SD	35.00
WI	24.00
Midwest Average	**36.68**
AZ	109.25
NM	58.00
OK	45.00
TX	30.00
Southwest Average	**60.56**
AB	74.37
BC	47.00
MB	36.00
NB	38.42
NS	43.55
ON	52.46
QC	62.50
(Anticosti Is.)	48.03
SK	43.00
Canada Average	**48.86**
TOTAL COMBINED AVERAGE	**41.86**

Resident Hunting License Prices

What does it cost to spend a day at your favorite sporting or entertainment event? According to StubHub, an online market place for sports and live entertainment tickets, it cost $54 to $7,530 to spend a day watching the Florida Gators play football last fall. It cost $54 to $17,780 to watch the Yankees host the Red Sox last summer. It would have set you back $90 to $4,500 to watch George Strait, the King of country music, in concert, and $88 to $699 for a seat at a Larry-the-Cable-Guy show in 2010.

These are all worthy events, but we'll argue none provide the amount of enjoyment you can receive from a far less expensive ticket – your hunting license. Depending on what state or province you live in, your adult resident license to hunt deer with a bow ranges from $10 (Hawaii) to $109 (Arizona). An 11-fold increase is quite a range but these are the extremes. In 2010, the average license cost about $42. Given that it affords the opportunity to provide wholesome meat for your family and numerous days afield, it's the best deal you'll find all year.

While all agencies offer licenses at bargain rates, let's compare each state, province and region to see who is getting a good deal and who is getting a great one. States and provinces sell licenses with varying privileges and tags. Some include a buck tag and some do not. Some include multiple antlerless deer tags and some include none. To best compare "apples to apples," the chart on this page includes data provided by C.J. Winand and *Bowhunter* magazine for the cost to archery hunt deer for an adult resident hunter in seven U.S. regions and eight Canadian provinces. We realize all deer hunters are not archers, but this analysis provides a solid comparison to state and provincial license prices.

The Southeast averaged the least expensive resident license at $29.15 with a range of $18 (South Carolina) to $56 (Tennessee). That's quite a deal for South Carolina residents as their deer season is 4.5 months long in some parts of the state. That equates to about 14 cents per day of the deer season. The Northeast has the next lowest price with an average of $35.73. It ranges from $22 in New Hampshire to $50 in New York. The high-quality deer, bear and upland bird hunting in New Hampshire makes this license one of the top bargains in North America. The Mid-Atlantic states are next with an average of $36.67 and a range of $30.50 in Maryland to $54 in Virginia. Be sure to notice the most expensive license equals a one-day "cheap seat" in Gainesville or the Bronx. The Midwest follows with an average of $36.68 and a range of $15 in Michigan to $60.50 in Iowa. Fifteen dollars for a Michigan license? That looks like a typo, but it is correct. The Pacific coast is next with an average of $37.03 and a range of $10 in Hawaii to $68.75 in California. Hawaii doesn't have whitetails, but it does have some QDMA members along with blacktails and axis deer. Canada is next with an average of $48.86 and a range of $36 in Manitoba to $74.37 in Alberta. Even at the upper end those big Alberta whitetails are a bargain. The West is next with an average of $50.21 and a range of $21 in Montana to $78 in Nevada. Finally, the most expensive average resident license to archery hunt deer is in the Southwest at $60.56. Licenses in this region range from $30 in Texas to $109.25 in Arizona. Arizona is the only state where a resident license cracks the $100 mark, but with 60 days to hunt deer plus the other species opportunities, even this license is a good deal.

So, where does your state or province rank? Pennsylvania is one of the top deer hunting states in the U.S. and it ranks below the average for its region and nearly $6 below the U.S. and Canada average. Maybe that is why the Pennsylvania Game Commission has unfilled positions and had to cut programs and services during the past few years. Unfortunately, it's not alone. Many states are losing positions and operating funds. Whether you like your state agency or not, realize our natural resources suffer from underfunded agencies. The next time you buy your hunting license take a moment to realize how much you get for that special piece of paper. You may even consider adding $1 or more to support wildlife and/or your local venison donation program.

Non-Resident Hunting License Prices

Now let's turn to non-resident license prices. States and provinces sell licenses with varying privileges and tags. Some include a buck tag and some do not. Some include multiple antlerless deer tags and some include none. Again, we turn to C.J. Winand and *Bowhunter* magazine for data on the cost to archery hunt deer for an adult non-resident hunter in seven U.S. regions and eight Canadian provinces.

The total combined average for the U.S. and Canada was $248.51. The Northeast averaged the least expensive non-resident license at $105.37 with a range of $73 (New Hampshire) to $140 (New York). That's quite a deal for New Hampshire hunters as 17 of 18 wildlife management units have a 92-day archery season that spans mid-September to mid-December. New Hampshire also has the least expensive non-resident archery license in the U.S. and Canada (Maine's is similarly priced at $74). The Mid-Atlantic States have the next lowest price with an average of $151.25. It ranges from $127 in Pennsylvania to $183 in Virginia. All six Mid-Atlantic States have similarly-priced licenses, and this region can provide exceptional hunting from either a quality or quantity perspective. The Southeast is next with an average of $233.97 and a range of $120 in North Carolina to $382.70 in Mississippi. Liberal bag limits and long seasons in most states provide exceptional opportunities for hunters in this region. Canada follows with an average of $240.50 and a range of $150.56 in Nova Scotia to $338 in Quebec. Even Saskatchewan's license is less than $300. It's no wonder so many deer hunters head to western Canada to fulfill a dream. The Midwest is next with an average of $246.89 and a range of $138 in Michigan to $551 in Iowa. You can find hunting jackets at Bass Pro Shops and Cabelas with higher price tags than most licenses in this region. Michigan and Minnesota ($140) have the least expensive licenses while Illinois ($473.25) and Iowa have the most expensive. Not coincidentally, Illinois and Iowa are also two of the top record-book producing states. The Pacific Coast is next with an average of $290.27 and a range of $95 in Hawaii to $394.20 in Washington. There aren't many whitetails in this region, so these prices are more reflective of hunting mulies, blacktails and other big game. The Southwest is next with an average of $354.81 and a range of $206 in Oklahoma to $609.25 in Arizona. As with resident licenses, Arizona also has the most expensive non-resident license. However, with over 70 days to hunt deer plus the other species opportunities, even this license price is warranted. Finally, the most expensive average non-resident license to archery hunt deer is in the West at $365.04. Licenses in this region range from $328 in Utah and $329 in Colorado to $418.25 in Idaho. Most states in this region have similarly-priced licenses, and they all provide spectacular views in addition to good deer hunting.

So, where does your state or province rank? Resident hunters often complain non-resident fees are too low and thus too inviting for non-residents to intrude on their hunting land. Non-resident hunters often complain their fees are too high and thus uninviting for them to pump dollars into rural economies. Regardless of which side of this discussion you sit on, realize most state agencies are funded primarily by license revenues. Wildlife is a public resource to be enjoyed by all, but unfortunately not funded by all. Hunters are the backbone of wildlife management programs and they (we) fund the lion's share of our state wildlife agencies. Good luck this hunting season, and as stated earlier, be sure to donate $1 or more to support wildlife and/or your local venison donation program.

STATE	PRICE ($)
CT	135.00
ME	74.00
MA	104.60
NH	73.00
NY	140.00
RI	96.00
VT	115.00
Northeast Average	**105.37**
AL	275.00
AR	150.00*
FL	156.50
GA	295.00
LA	326.00
MS	382.70
NC	120.00
SC	225.00
TN	175.50**
Southeast Average	**233.97**
CO	329.00
ID	418.25
MT	348.00
NV	398.50
UT	328.00
WY	368.50
West Average	**365.04**
AK	235.00
CA	386.15
HI	95.00
OR	341.00
WA	394.20
Pacific Average	**290.27**
DE	155.00
MD	155.00
NJ	135.50
PA	127.00
VA	183.00
WV	152.00
Mid-Atlantic Average	**151.25**
IL	473.25
IN	150.00
IA	551.00
KS	394.30
KY	190.00
MI	138.00
MN	140.00
MO	225.00
NE	229.00
ND	215.00
OH	149.00
SD	195.00
WI	160.00
Mid-West Average	**246.89**
AZ	609.25
NM	297.00
OK	206.00
TX	307.00
Southwest Average	**354.81**
AB	239.99
BC	305.00
MB	155.00
NB	206.79
NS	150.56
ON	223.04
QC	338.00
(Anticosti Is.)	260.16
SK	286.00
Canada Average	**240.50**
TOTAL COMBINED AVERAGE	**248.51**

Quotable QDMA:

The length of the primary firearms season averages 68 days for southeastern states and ranges from two days in some Arkansas zones to 140 days in portions of South Carolina.

Season Length and Bag Limit

Which state or province has the longest firearms season? How about the most liberal buck bag limit? Season lengths and bag limits vary widely, but the Southeast has far and away the longest average firearms season and annual bag limit. The length of the primary firearms season averages 68 days for southeastern states and ranges from two days in some Arkansas zones to 140 days in portions of South Carolina. With the exception of Tennessee, all states that reported data had a least some zones with firearms seasons over 40 days long!

The primary firearms season averages 22 days in eastern Canada and ranges from 14 days in Ontario to 30 days in Nova Scotia. Long seasons in this region nearly guarantee hunters an opportunity to hunt on snow. The firearms season averaged 21 days for Northeastern states and ranged from one to 49 days in New Jersey depending on the deer management zone. Some areas in New York and Virginia also had seasons more than 40 days long. The Midwest averaged the shortest firearm seasons at 13 days. Season lengths ranged from seven days in Illinois and Ohio to 25 days in South Dakota. Five states (Illinois, parts of Minnesota, Nebraska, Ohio, and Wisconsin) had seasons less than 10 days long.

The Southeast also averaged the most liberal buck bag limit (3.2 bucks). This ranged from one buck in areas of Texas to five or more in South Carolina and six in Louisiana. In fact, in 15 of South Carolina's 46 counties (approximately 1/3 of the state) there is no buck limit. The Northeast average was similar (3.1 bucks) and ranged from one buck in Pennsylvania to nine in Maryland. Most Northeastern states allow one to three bucks per year. Surprisingly, the Midwest average was 2.7 bucks per year. However, this average is highly influenced by South Dakota (14 bucks), the highest reported bag limit in our survey, and it is only 1.6 bucks per year when the South Dakota bag limit is excluded. Five Midwest states (Indiana, Kansas, Kentucky, Minnesota, Ohio) limit hunters to one buck, and five more (Iowa, Illinois, Michigan, Nebraska, Wisconsin) limit hunters to two bucks per year. That leaves only three Midwestern states with other limits. Eastern Canada averages the lowest buck bag limit at one per year. Only Anticosti Island in Quebec allows more than one buck per year.

What do these statistics mean for your deer management program? With respect to buck harvest, season lengths and bag limits can be altered to help protect young bucks, but other factors also need to be considered. For example, Pennsylvania has a short season (12 days) and the most restrictive bag limit (one buck), yet hunters historically shot the majority of yearling bucks every year. This was due to nearly a million deer hunters being very successful within the framework of Pennsylvania's season. In 1989, 81 percent of the antlered buck harvest in Pennsylvania was 1½ years old. In 2009, that statistic was only 49 percent. Both years had the same season length and bag limit for bucks. The point is season length and bag limits are useful tools for a deer manager, but to be most effective, they need to be used in conjunction with other tools and accompanied by a strong educational campaign.

Agency	Primary Firearms Season (Days)	Buck Bag Limit
Iowa	14	2
Illinois	7	2
Indiana	16	1
Kansas	12	1
Kentucky	16, 10	1
Michigan	16	2
Minnesota	9-16	1
Missouri	11	3
North Dakota	17	*
Nebraska	9	2
Ohio	7	1
South Dakota	25	14
Wisconsin	9	2
Midwest average	**13**	**2.7**
Connecticut	DNP	DNP
Delaware	8	2
Massachusetts	12	2
Maryland	14	9
Maine	25	2
New Hampshire	26	3
New Jersey	1-49	6
New York	23, 44	2
Pennsylvania	12	1
Rhode Island	34	3
Virginia	43, 13	3, 2
Vermont	16	2
West Virginia	DNP	DNP
Northeast Average	**21**	**3.1**
Alabama	73	3
Arkansas	2-42	2
Florida	DNP	DNP
Georgia	112-126	2
Louisiana	88-95	6
Mississippi	46	3
North Carolina	18-67	2 to 4
Oklahoma	DNP	DNP
South Carolina	70-140	5+
Tennessee	39	3
Texas	58, 72	1 to 3
Southeast Average	**68**	**3.2**
New Brunswick	27	1
Nova Scotia	30	1
Ontario	14	1
Quebec	16	1 (2 Ant. Is.)
Canada Average	**22**	**1.0**

* limited quota by drawing
DNP = data not provided

Tree Stand Accidents

Deer hunting from tree-stands is as common today as grunt tubes and trail cameras. Fortunately, full body harnesses are equally common, and these safety devices should be worn by hunters every time we ascend a tree. To measure trends in tree-stand accidents over the past decade we surveyed state and provincial wildlife agencies for the number of tree-stand accidents occurring in 1999, 2004 and 2009. Of the 37 states in the Northeast, Southeast and Midwest and four provinces in eastern Canada that encompass the majority of white-tailed deer habitat, we received responses from 35 states and four provinces.

In the Midwest, nine of 13 states (69 percent) do not track the number of tree-stand accidents. For states that do, the average number per state per year was small but it increased from 1999 to 2004 and again in 2009. In the Northeast seven of 11 states (64 percent) that responded do not track the number of tree-stand accidents. For states that do, the average number per state per year was small and was slightly less in 2009 than in 1999. In eastern Canada only one province tracks this data. Quebec reported a small number of accidents each year, but the 2009 total was 2.5 times more than in 1999.

Contrary to other regions, the Southeast tracks tree-stand accidents very closely. All nine states that we received data from monitor this statistic, and while the yearly average doubles that of other regions, the 2004 and 2009 values were 39 percent below the average number of accidents in 1999. This decline is no doubt in part to improved safety systems, climbing equipment, and educational campaigns by the National Bowhunter Education Foundation and others. It is also in step with the recent decline of overall hunting incidents the past 15 years (refer to page 37 of the 2009 QDMA Whitetail Report).

Given the number of hunters, the number of reported accidents is small. However, many accidents result in a fatality or disability and therefore greatly impact that hunter's family. Also, researchers at the University of Alabama at Birmingham claim young hunters between the ages of 15 and 34 are the most likely to suffer serious tree-stand accidents.

Be sure to wear your safety harness every time you leave the ground and encourage others to do the same.

Quotable QDMA:

Contrary to other regions, the Southeast tracks tree-stand accidents very closely. The 2004 and 2009 values were 39 percent below the average number of accidents in 1999.

Number of Tree-Stand Accidents by State, 1999, 2004 and 2009

Agency	'99	'04	'09	% change '99-'09
Illinois	9	17	14	56
Indiana	*	*	*	
Iowa	0	0	4	
Kansas	2	0	2	0
Kentucky	3	3	3	0
Michigan	*	*	*	
Minnesota	*	*	*	
Missouri	*	*	*	
Nebraska	*	*	*	
North Dakota	*	*	*	
Ohio	*	*	*	
South Dakota	*	*	*	
Wisconsin	*	*	*	
Midwest average	**4**	**5**	**6**	**50**
Connecticut	DNP	DNP	DNP	
Delaware	0	0	0	0
Maine	*	*	*	
Maryland	7	7	7	0
Massachusetts	1	0	0	-100
New Hampshire	*	*	*	
New Jersey	*	*	*	
New York	*	*	*	
Pennsylvania	*	*	*	
Rhode Island	1	0	1	0
Vermont	*	*	*	
Virginia	20	15	18	-10
West Virginia	DNP	DNP	DNP	
Northeast Average	**6**	**4**	**5**	**-17**

Agency	'99	'04	'09	% change '99-'09
Alabama	22	12	14	-36
Arkansas	18	7	6	-67
Florida	*	*	*	
Georgia	35	17	29	-17
Louisiana	4	3	0	-100
Mississippi	16	14	15	-6
North Carolina	16	30	19	19
Oklahoma	*	*	*	
South Carolina	13	7	8	-38
Tennessee	*	8	11	
Texas	*	2	1	
Southeast Average	**18**	**11**	**11**	**-39**
3-Region Average	**10**	**8**	**8**	**-20**
New Brunswick	*	*	*	
Nova Scotia	*	*	*	
Ontario	*	*	*	
Quebec	2	1	5	150

* data not available
DNP = data not provided

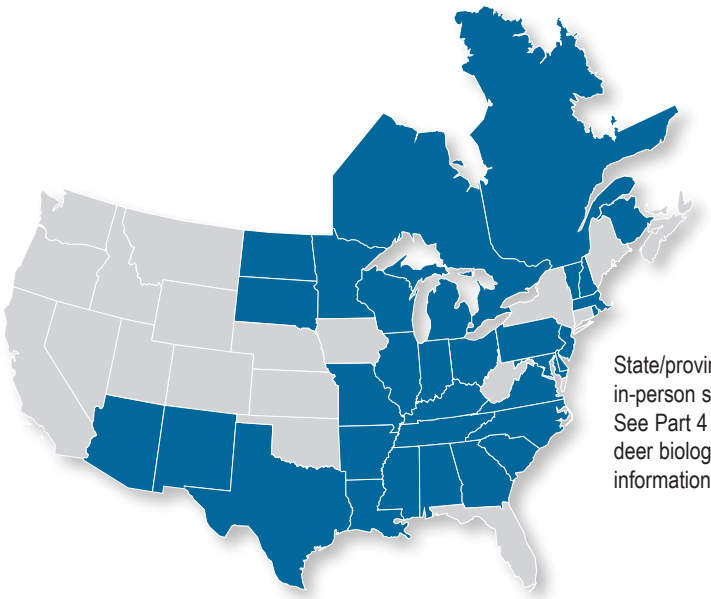
Agency Outreach

What educational information does your state/provincial agency make available to you? All hunters are aware of the annual regulations booklet that comes with your hunting license, but many would be surprised at the volume of additional information and assistance that is available. All agencies provide educational information on their websites. This includes everything from seasons and bag limits to research projects in the state/province, harvest summaries, deer management plans, deer biology articles and more. Many include information on taking care of harvested game, disease outbreaks, and where to find a venison donation program. Some even include information on habitat management, food plots, and how to conduct various types of deer surveys. It is worth spending some time on your state/provincial agency's website to familiarize yourself with the available information.

Agencies provide printed materials, though with widespread budget cuts (see page 17 of the 2010 Whitetail Report) and nearly universal Internet access, printed literature is less common today than in the past. Most state/provincial agencies also conduct in-person site visits with landowners (the map below highlights those that do). Some agencies visit only for specific items, such as depredation concerns (Quebec is one example), while others provide technical advice on habitat management (New Hampshire). Some even provide management plans for landowners (Pennsylvania) and assistance with funding habitat improvement projects (Kansas).

Most agencies hold public meetings and many e-blast news releases (Massachusetts, New York, Wisconsin, etc.); some produce TV shows (Kentucky), segments (Tennessee), DVDs (Arkansas), popular articles (Virginia), and radio interviews (Iowa); host field days (Texas), seminars (Louisiana), meetings (Arizona), workshops (Michigan), and online forums (Maryland); attend sportsman's shows (Vermont); and of course you can always pick up the phone and call your agency's deer biologist with questions.

Today's hunters are far more knowledgeable on deer biology and management than our predecessors. One reason for this is the sheer volume of information available today. QDMA strives to provide practical information to sportsmen and women each day via our website, publications, and outreach efforts, and your wildlife agency is doing the same. Be sure to take advantage of what QDMA and your state/provincial agency have to offer.



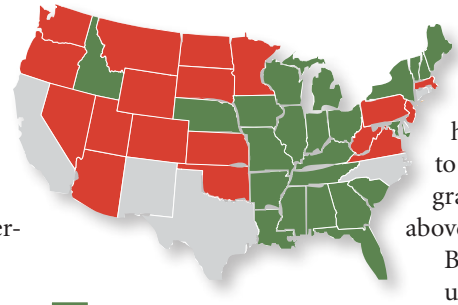
State/provincial agencies that provide in-person site visits to landowners. See Part 4 for a listing of state/provincial deer biologists and their contact information.

TES RANDLE JOLLY

Tracking Dogs

A tracking dog can be a deer hunter's best friend – where legal.

The use of tracking dogs for recovering big-game animals shot by hunters, particularly white-tailed deer, is allowed in 27 states. Eighteen states forbid the use of tracking dogs, but Virginia and others are pursuing legislation to provide this opportunity. In five states the use of tracking dogs is allowed only under certain circumstances or only in certain areas or regions.



Ironically, Virginia is one of seven southeastern states that allow the use of dogs for deer hunting, but not for locating deer shot by hunters; at least that's the case in half of the "Old Dominion" state or during archery and muzzleloader seasons. Matt Knox, Deer Project Coordinator for the Virginia Department of Game and Inland Fisheries, would like to see leashed dogs be allowed to recover deer shot by hunters that otherwise would not have been retrieved in many cases.

Responsible hunters make every effort to retrieve the game they shoot. The widespread use of tracking dogs is testimony of the acceptance of this proven method of retrieving game animals that have been shot by hunters. Educational efforts and the persistence of responsible hunters will be necessary to convert the red and gray states on the map above to green states. United Blood Trackers (www.unitedbloodtrackers.org) is a newly-organized group dedicated to promoting resource conservation through the use of trained tracking dogs in the ethical recovery of big game. Sportsmen can use their website to "find a tracker" in their home state.

The increasingly common use of leashed tracking dogs to recover downed game is a positive sign for the future of hunting. Society expects hunters to make every reasonable effort to recover game they have shot, and trained tracking dogs can greatly assist in these efforts.

Quotable QDMA:

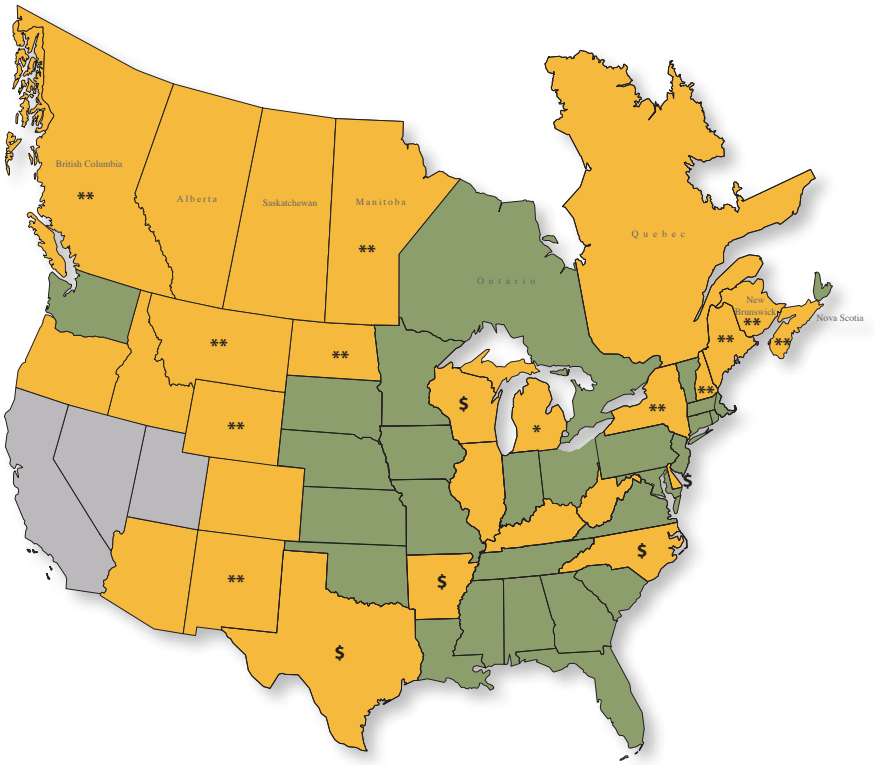
Eighteen states forbid the use of tracking dogs to recover game shot by hunters, but Virginia and others are pursuing legislation to provide this opportunity.

Hunting Guides and Outfitters

According to the latest U.S. Fish and Wildlife Service (USFWS) National Survey of Fishing, Hunting and Wildlife-Associated Recreation, during the past 40 years the number of non-resident hunting licenses, tags, permits and stamps as a percentage of total purchases nearly doubled, going from 4.6 percent in 1966 to 9 percent in 2006.

In addition, based on supplemental data from that same survey, over 2.2 million of the 3.1 million license buyers actually traveled and hunted outside of their home state in 2006; spending over 18 million days and $6.7 billion pursuing game as a non-resident. Clearly, this trend indicates that more and more hunters are crossing state lines to hunt than in the past.

Various game species were pursued in these endeavors, and certainly many of these non-residents either did so through a lease or planned the entire trip themselves; hunting on state or federal land, finding lodging or camping out, and scouting and hanging their own stands, a true do-it-yourself experience. However, the data also show significantly more of these non-residents pursued whitetails than any other game species, big or small, and that over a quarter million of them (274,560, or 12.4 percent) collectively spent almost $150 million to hunt deer specifically through a guide service. So, suffice it to say, the white-tailed deer outfitting business is a very big industry, drawing tens of thousands of hunters into neighboring states and provinces each year. It's also likely a business that may continue to grow annually, particularly with the increase of quality and trophy deer management programs around the nation coupled with an increasing trend in limited access.



Outfitters/guides must be licensed or permitted in these states and provinces

Outfitters/guides not regulated

Data not available

*Outfitter/guide license required on state land only
**Exam required to receive license/permit
$ Only a fee and application required to receive license/permit

Buyer Beware

We've all heard the horror stories. A guy saves his money all year long to go on his dream hunt with a guide service, only to have the entire experience seem like a nightmare. Inadequate accommodations, too many hunters in camp, or even worse, being left stranded at the airport. The fact is there are many more reputable outfitters that exist out there than ones that will leave you high and dry; however, it's ultimately up to the consumer to do the research and to find the best and trustworthy service to match their needs.

QDMA surveyed each of the states and Canadian provinces that have sustainable, hunted whitetail populations to see which ones regulate deer hunting outfitters and guides by requiring them to be licensed or permitted in some fashion (see the map on the facing page). Our analysis indicates that currently most of the Canadian provinces, and the western and New England states have some form of license or permit requirement. Many of these also include a thorough, vetted process that lends itself toward the outfitter's or guides' credibility; for example: an exam with a minimum passing grade, proof of liability insurance and/or bond, CPR or first-aid training, proof of prior experience, no previous game or civil convictions, and others. Some even consist of a background check for the applicants. Most are regulated through the state or provincial wildlife or law enforcement agency; others are through the local professional outfitters and guide association, which exist in many of these places.

However, surprisingly, in the heartland of the United States and in the province of Ontario, where the bulk of record-book bucks are concentrated (refer to pages 5 and 41 of the 2009 QDMA Whitetail Report), and where most of the well-known destinations to travel for whitetails are located, it is relatively unregulated. For the ones that do, some of them only require a license if providing the service on public land or simply ask for an application and registration fee, with nothing more.

So, if you are planning on using a whitetail outfitter or guide service in the future, do your homework. First see if that state requires licensure. If they do, that will help tremendously; you can ask that state or province's governing agency about a particular outfitter's service history. Don't bother to look them up through the Better Business Bureau, most are not listed. There are a few comprehensive review websites out there, and they can help; just type "Outfitter Review" into your search engine. Also make sure to contact their references and establish a dialogue via phone and email well before traveling to your destination. But, like most things in life when looking for a new service provider, go on a word-of-mouth recommendation from a trusted friend.

Coming and Going

You may be wondering which states are the most popular among non-residents, and which states' residents are leaving to hunt elsewhere. The chart below, based on the 2006 USFWS National Survey, shows the 10 states that had the most visitation by non-resident hunters that year, and the 10 states with the most residents who *only* hunted out of state.

Number of Non-Resident Hunters (top 10 states in '06)

State	NR hunters ('06)
Georgia	136,127
Colorado	133,556
Texas	122,589
Pennsylvania	111,434
Kansas	87,827
South Dakota	81,323
Alabama	81,078
West Virginia	74,787
New York	74,727
Missouri	68,555

Percentage of state's residents who ONLY hunted out of state (top 10 states in '06)

State	% Only Hunting Out-of-State	
Florida	34.2%	(183,136)
New Jersey	14.6%	(34,329)
California	13.5%	(97,085)
Louisiana	13.2%	(75,094)
Kentucky	12.6%	(36,170)
Maryland	11.9%	(46,105)
Rhode Island	11.6%	(3,965)
Nevada	11.2%	(16,600)
Delaware	9.8%	(5,882)
North Carolina	8.8%	(84,710)

Part Three:

Reference & Research

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Quotable QDMA:

Many areas in the Midwest can sustain high densities while still maintaining healthy deer and habitats. This isn't possible in most of the whitetail's range, where habitat quality and herd health suffer under high densities.

What's The Best Deer Density?

"How many deer are there?" From Florida to Maine and west to the Pacific, deer hunters are extremely interested in the number of deer in the area they hunt, and they usually want to hear an exact figure. While knowing this number has advantages, it is far more important to know the impact this number of deer is having on the habitat. The number of deer is expressed as density and can be estimated by numerous techniques including trail-camera surveys. Deer density is usually referred to as either deer per square mile or the number of acres per deer. The scientific literature commonly uses the number of deer per square mile, so that's what we'll use in this article.

Proper Density

The proper number of deer for an area depends on many variables including habitat quality, age structure of forested habitat, soil quality, climatic extremes, season, landowner's goals, and many others. Geography directly influences many of these variables as herds at the northern limits of deer range generally have lower densities than more southerly herds as a result of shorter growing seasons, winter severity, or both. As a general rule, herds in the Coastal Plain of the Southeast should also have lower densities as soil and habitat quality are less productive than the heavier, loamier soils and habitats farther inland. The Midwest reigns supreme in soil quality and agriculture and therefore supports some of the highest density herds in North America.

Many areas in the Midwest can sustain these high densities while still maintaining healthy deer and habitats. This isn't possible in most of the whitetail's range, where habitat quality and herd health suffer under high densities. Once habitat is damaged by deer, numerous wildlife species feel the impact. The habitat may require years to recover before it can support a respectable percentage of the prior deer density.

Density Ranges

Hunters, researchers and management agencies routinely refer to "appropriate" deer densities. In general, foresters claim if you're trying to grow red or white oaks in heavily forested areas containing little or no agriculture, deer densities above 10 to 20 per square mile can prevent new seedling regeneration. If the area contains a mix of forests and agriculture, some foresters claim you may be able to have 20 to 30 deer per square mile before losing the ability to regenerate oaks. Are there areas where these densities and regeneration rates hold true? There is abundant research by Dr. David deCalesta (retired USDA Forest Service research wildlife biologist) and

RALPH HENSLEY

Optimal deer density varies from property to property and across seasons. For example, deer populations that are in good health when agricultural crops are growing may suffer after the crops are harvested if the rest of their habitat offers inadequate forage.

others showing the deer densities necessary to regenerate a variety of forest species.

Deer Per Square Mile or Acres Per Deer?

Deer density is usually expressed in either "deer per square mile" or in "acres per deer." Since there are 640 acres in a square mile, simply divide the density into 640 to convert between either. For example, 10 deer per square mile equals 64 acres per deer (640 ÷ 10 = 64), and 20 acres per deer equals 32 deer per square mile (640 ÷ 20 = 32).

Deer Per Square Mile	10	20	30	40	50	60
Acres Per Deer	64	32	21	16	13	11

One well-reported example is the Kinzua Quality Deer Cooperative (KQDC) in northwestern Pennsylvania. The KQDC consists of five land management agencies' properties totaling 73,000 acres. The Cooperative's goals include improving deer quality, hunter satisfaction, and forest health. Staff members from six management agencies and numerous volunteers annually collect a tremendous amount of data on the deer herd and habitat. From 2001 to the present, the deer density on the KQDC has been reduced from nearly 30 to approximately 15 deer per square mile following the hunting season. When the density dropped below 15, there was a dramatic difference in impacts on forest regeneration. In this heavily forested environment, 15 deer per square mile appears to be the threshold for a healthy, sustainable forest. However, there are also areas with healthy forests and higher deer densities.

Example 1: From Unhealthy to Healthy

We are fortunate to visit many properties during the year. One such property is a 500-acre piece in north-central Pennsylvania that historically contained a combination of oak-hickory-maple woods and agricultural crops (hay, corn and oats) for a working dairy farm. In the 1970s and 1980s the property was home to well over 100 deer per square mile. No official density survey was conducted in those days but hunters routinely saw over 100 deer each day (per hunter) during the hunting season and several hundred deer each night while spotlighting during summer and fall. Needless to say, no oak seedlings were surviving in the forests

Fast forward to 2002. The owners implemented a forest management program and made a concerted effort to balance the deer herd with the habitat. In 2004 at the height of their herd reduction effort, they shot 30 adult does on 500 acres. Most of these deer were shot during two days, and the significant hunting pressure applied in such a short time made it impossible to reach their harvest goal of 35 adult does.

Several years of intense but calculated antlerless harvests and two significant timber harvests later and the deer herd and property look much different. A hunter won't see 100 deer per day anymore but will average close to two deer per hour, and some will see 30 or more deer on good days. The property now produces a variety of forbs in the woods each spring, including Canada mayflower, trillium and other important deer foods, and the timbered areas are thick with regenerating ash, maples and oaks. The managing forester even commented this property was the poster child for oak regeneration in Pennsylvania. Amazingly, this oak regeneration is occurring with a deer density likely exceeding 50 deer per square mile. Five years of pre-season trail-camera surveys and four years of post-season pellet count surveys substantiate this claim.

Why can this land successfully regenerate a new forest with a deer density at least three times as high as the KQDC's? The properties are within 100 miles of each other in northern Pennsylvania but they differ in many ways. The KQDC lies within a snow belt and receives much more snow annually than the farm property. Over 10 percent of the farm remains in agricultural production. Much of this is cattle pasture but it contains a legume component. The farm's owners maintain 1 to 2 percent of the farm in food plots, annually conduct browse cuts, and have conducted two sizable timber harvests on approximately 25 percent of the forested habitat as part of their forest management program. The combination of milder winters and these habitat management strategies provides a tremendous amount of forage and supports a higher density of deer without negatively impacting the habitat.

Quotable QDMA:

It doesn't matter if the average habitat in your area should be able to support 10 or 20 or 50 deer per square mile. What does matter is what the property you're managing can actually support today and during each season of the current year. This number likely differs from your neighbor's, and it definitely differs from summer to winter.

Example 2: An Exception to the Rule

A few years ago QDMA helped put a management plan together for a 12,000-acre property in the Midwest. An intensive trail-camera survey estimated over 100 deer per square mile, yet a pre-survey habitat assessment showed a healthy forest. How could this be? As you might guess, the property contained considerable acreage in agricultural crops. We've seen plenty of examples in the Midwest where high deer densities were easily supported during summer and fall by corn and soybeans. These same herds annually degrade the forested areas when the crops are harvested. However, that wasn't the case on this particular property, although average body weights for bucks and does were lower than expected, suggesting the possibility of social stress associated with the high deer density.

We used the preceding situations to show examples of healthy forests with three vastly different deer densities. The last example was an extreme case, and we certainly don't recommend trying to manage deer at that density or want to give the impression it is possible to do so in much of the whitetail's range. The soil quality, mild winters, adequate precipitation, combination of forested and open areas, and intense use of agricultural plantings all combined to make this property the exception to the rule. Also, given the lower than expected body weights and possible social stress, the sustainability of this high-density herd is questionable.

The Relationship Between Density and Habitat

It is important to understand the general ranges for appropriate deer densities for the land we hunt and/or manage, but it is far more important to assess and monitor the health of the deer herd and habitat to ensure we're being responsible stewards. For example, it doesn't matter if the average habitat in your area should be able to support 10 or 20 or 50 deer per square mile. What does matter is what the property you're managing can actually support today and during each season of the current year. This number likely differs from your neighbor's, and it definitely differs from summer to winter. You determine this range (notice we didn't say number) by collecting data from the deer herd and habitat and monitoring the health of each. Harvest data (weight, antler parameters, kidney fax index, etc.) provide an index to herd health and allow you to monitor long-term trends. Browse and regeneration surveys provide an index to habitat health and allow you to measure deer impacts on the habitat. Collectively, these tools allow you to assess the effects of your management strategies and antlerless harvest rates.

Never done a browse or regeneration survey? Don't sweat, they are simple to conduct. An article titled "Over the Limit" by John Donoughe and Mike Wolf in the December 2007 Quality Whitetails described how to conduct a browse survey (it's available in the articles archive at www.QDMA.com).

If your habitat survey suggests deer are negatively impacting their habitat, then you have three options:

1. Reduce the deer herd to a level that doesn't negatively impact the existing habitat,
2. Improve the habitat to raise carrying capacity (timber stand improvement, food plots, etc.), or
3. Use a combination of 1 and 2.

By implementing one of these options you can achieve your goal of having a healthy herd and habitat, without even knowing the actual deer density.

Fibromas

Each year hunters across the whitetail's range encounter deer with "warts." These growths are cutaneous fibromas caused by a papilloma virus. Cutaneous fibromas are hairless tumors that can be found on any part of the skin, however they rarely extend below the hide. Fibromas are also called warts, tumors, papillomas and fibrosarcomas, and they occur everywhere deer live. They are usually temporary on the body and can vary from half an inch to 8 inches in diameter, or larger. Fibromas can occur singly or in clumps. Whitetails, blacktails and mule deer can get cutaneous fibromas, which are different from Shope's fibromas in cottontail rabbits, squirrel fibromas in gray squirrels and woodchucks, and "warts" in livestock. Biting insects and contaminated vegetation can transmit the virus from one deer to another, and an infected deer can transmit the virus by direct contact with another animal. Fortunately deer can't spread the virus to farm animals or humans.

Fibromas are the most conspicuous deer disease, and hunters routinely report them to the state or local deer managers. Fibromas can look grotesque, but unless the tumors become large enough to interfere with an animal's sight, breathing, eating or walking, they have little impact on the individual animal and thus, little or no impact on the deer population.

NATHAN PYLE

Fibromas are usually not serious and occasionally clear up on their own. However, in rare cases, dense fibromas can interfere with eyesight, breathing, feeding or mobility. This deer is clearly in poor health as a result of dense fibromas on its head and body.

Should you eat the meat from a deer with fibromas? Only large tumors with secondary bacterial infection cause a deer to be unfit for human consumption. Infected tumors often are swollen and contain yellowish pus. Small, uninfected fibromas do not affect the quality of the meat. If you see a whitetail with fibromas while hunting, will harvesting that deer prevent the spread of fibromas to other deer? Will it reduce the prevalence of fibromas in your area? Unfortunately, we don't know the answers to these questions. Given the nature of viral transmission, it is possible that by harvesting that animal, you may prevent the spread of the virus to other deer that animal would have come in contact with. On the other hand, the virus that causes fibromas is present in deer herds across the country, yet it is uncommon and affects only a small percentage of animals. Some deer may even have developed immunity to the virus. And, for most deer, fibromas are harmless, and the individual will eventually recover. For these reasons, harvesting a deer just because it has fibromas is probably not necessary unless the animal has an extremely severe case and is clearly debilitated.

Reference: Field Manual of Wildlife Diseases in the Southeastern United States, second edition, by William R. Davidson and Victor F. Nettles. Published by the Southeastern Cooperative Wildlife Disease Study, The University of Georgia.

Antler Casting

Some bucks always seem to carry their antlers longer than others. Others always seem to drop them early. Some years, numerous bucks drop them early, even during hunting season. Ever wonder what is responsible for how long bucks carry their antlers?

Quotable QDMA:
Antler growth, mineralization, and casting is largely controlled by hormones and regulated by photoperiod (the amount of light per day).

The Antler Cycle

Antler growth, mineralization, and casting (dropping antlers) is largely controlled by hormones and regulated by photoperiod (the amount of light per day). Much has been written on this subject, and you can find detailed accounts of the complex interactions between the pineal and pituitary glands, testes, and the hormone cocktails involved in the process. In brief, antlers generally grow during spring and summer and mineralize in August and September in response to increasing testosterone levels. Testosterone levels begin increasing in July, peak in late October to early November, drop through late December, and remain at reduced levels through the following July. The testosterone cycle is largely governed by photoperiod, so just as decreasing daylight and increasing testosterone causes antlers to mineralize and shed their velvet, increasing daylight and decreasing testosterone causes antlers to fall off. According to acclaimed antler expert Dr. George Bubenik of the University of Guelph in Ontario, the testosterone levels causing antler casting appear to be very close to the levels responsible for velvet shedding.

How Do Antlers Fall Off?

Antlers grow from an attachment point on the skull referred to as the pedicle. This secure connection obviously withstands the impact from fighting, and most hunters have dragged at least one buck by the antlers. Dr. Bubenik explains that maintenance of the connection between the dead tissues of the antler and the living tissues of the pedicle is possible only during the period of high testosterone levels. So, when testosterone levels decline, a special type of bone cell called an osteoclast removes the bone tissue by reabsorbing calcium between the antler and pedicle, and the antler falls off. Bucks occasionally shed both antlers within minutes but more commonly carry one for a few more hours or days.

Factors Affecting Testosterone Levels

Again, photoperiod has a major influence on testosterone levels and thus the timing of antler casting, but other factors can impact them too. Nutrition is important, as bucks in good physical condition generally retain their antlers longer than those who are nutritionally stressed. Widespread early antler casting may signify a nutritionally stressed herd resulting from too many deer for what the habitat can support. This can be an annual event caused by harvesting too few antlerless deer, or a single event caused by a mast crop failure, prolonged flooding, extreme or prolonged cold, or some other environmental variable.

Injuries can also impact testosterone levels. The testes are the major producers of testosterone, so an injury to them can reduce testosterone levels, as can injuries to a buck's body. Bucks with body injuries don't immediately cast their antlers. Depending on the severity of the injury, they may cast them earlier than they normally would have. Noted author Charlie Alsheimer reported in 2009 that one of his captive bucks cast his antlers during the first week in March for seven of eight years while the buck was 3½ to 10½ years old. The single exception came after the buck was injured while fighting. He cast his antlers on Christmas day that year, more than two months earlier than typical for him.

Dominance status can also impact testosterone. In northern regions, dominant bucks often shed their antlers earlier than younger, smaller deer. This may be related to nutritional status as many but not all older bucks partake heavily in the breeding season. It may also be related to younger bucks experiencing less dramatic decreases in testosterone levels. Bucks skip many meals during the breeding season, and those that rut hard may be in poor post-rut condition. This can occur even when abundant forage is available for deer. These bucks are choice candidates for early antler casting, as long as another overriding factor isn't present.

In the winter of 2009-2010, QDMA noted widespread reports of antler shedding occurring earlier than normal. Dave Travaglio of West Sunbury, Pennsylvania, got the photo above on January 15. Tom Barnard of West Plains, Missouri, got the photo on the right on January 4. Jim Braun of Berlin, Wisconsin, got the photo on the left on December 12.

That overriding factor is the presence of estrus does, as they can influence testosterone levels. Dr. Bubenik states an unbred doe's pheromones can keep bucks' testosterone levels elevated. This factor doesn't relate to early antler casting, but it can explain late casting in some herds, especially those with highly skewed sex ratios during the rut, those with peak breeding seasons in late December and January, or those with high rates of sexual maturity in doe fawns. Most northern hunting seasons correspond closely to, or immediately follow the rut, and research in Pennsylvania suggests the majority of does are bred during their first estrous cycle, even in the absence of mature bucks. Conversely, many southern seasons begin well before the rut, and thus have the opportunity to dramatically skew the adult sex ratio prior to the breeding season. In these situations it's not uncommon for does to go unbred during their first estrous cycle. Also, peak rut in some southern herds occurs from Christmas through late January, so the majority of does are in estrus much later than their northern counterparts. Finally, the productive Midwest experiences higher doe fawn breeding rates than the Northeast or Southeast. Highly skewed sex ratios, late ruts, and fawns reaching sexual maturity in December and January are three reasons that may explain why southern and Midwestern bucks tend to carry their antlers longer than bucks in the North.

One last factor to consider with respect to antler casting is the influence of fighting. Dr. Bubenik states that frequent fighting can prolong elevated testosterone levels and cause unusually deep mineralization of the antler pedicle. This deep mineralization can then delay antler casting of one or both antlers.

Summer Nutritional Demands

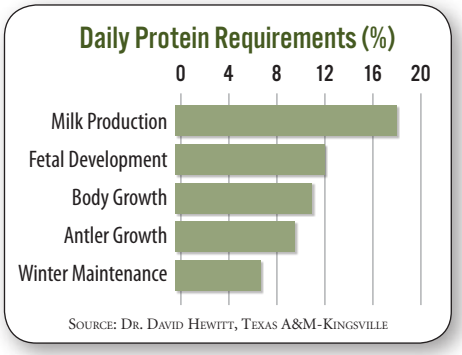
Pursuing Quality Deer Management goals can be a year-round endeavor, but the importance of your management efforts are higher in spring and summer than perhaps any other time of year. Adults can lose 15 to 30 percent of their body weight during winter. This loss must be recovered quickly in time for a buck's body and antler growth cycles to begin, and for a doe's pregnancy and fawn-rearing needs. Let's take a look at the protein and energy requirements of whitetails in summer, as well as how to meet these needs with high-quality spring and summer forages.

Quotable QDMA:
Adults can lose 15 to 30 percent of their body weight during winter. This loss must be recovered quickly in time for a buck's body and antler growth cycles to begin, and for a doe's pregnancy and fawn-rearing needs.

Spring Recovery and Summer Growth

Whitetails are well adapted to surviving winter – even harsh winters – however spring snow storms, floods or other events that restrict forage and delay green-up can be devastating. Bucks begin growing antlers in spring, but antler growth is secondary until body resources lost during winter are replenished. The amount needed to replenish the body depends on the severity of winter and the animal's nutritional status entering it. The goal for some managers' habitat efforts is to ensure bucks receive adequate nutrition to optimize antler growth. This is an understandable goal, but energetically speaking, antlers are less expensive than body growth for either sex and far less expensive than gestation or lactation for does. Whitetails have a relatively long gestation (about 200 days) and does have increased nutritional demands during spring. Although breeding occurs during autumn, over 80 percent of fetal growth and 90 percent of the energy spent on gestation occurs during the final trimester of pregnancy. For does bred in mid-November, the last trimester begins in late March/early April and generally corresponds to spring green-up.

Maximum antler growth occurs during summer and is directly linked to nutrition. Some bucks average over one inch of antler growth per day throughout the growing period (approximately 150 days), but can grow much more per day during the height of summer. Bucks with access to high-quality nutrition have the ability to express more of their antler growth potential while bucks on poor quality diets have restricted antler growth. This is common sense, but far too many hunters blame poor antler growth on genetics when the real culprit is lack of nutrition, lack of age, or both.



Source: Dr. David Hewitt, Texas A&M-Kingsville

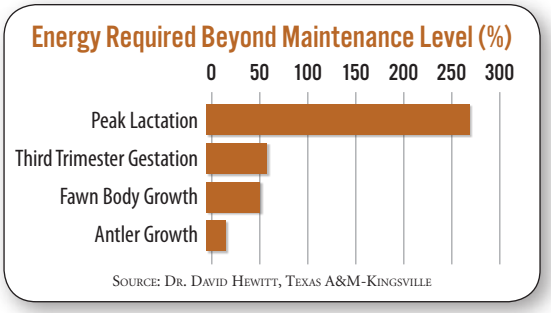
Fawns are born as spring turns to summer, and does now require even more energy as lactation is four to five times more costly than gestation and nearly 20 times more costly than antler growth. A doe's nutrient-rich milk contains twice the protein and energy per unit of volume as cow's milk. Undernourished does still produce nutrient-rich milk but at reduced rates. Well-nourished does with twins generally produce 67 percent more milk than does with single fawns. Lactation is extremely expensive for does, and that is why they're often the last to molt their summer coat and grow their winter coat; they're putting energy into milk production so molting is delayed.

Fawns also have high energy demands. They weigh 5 to 10 pounds at birth, will double their weight within two weeks, and can triple it within a month. Fawns depend heavily on their mother's milk for nutrition the first two to three months but can survive exclusively on vegetation by around two months of age. Fawns also have high protein requirements, especially at weaning when their diets should consist of 14 to 22 percent protein.

Creating a Diversity of Food Sources

Similar to energy requirements, protein requirements change seasonally, and they differ for bucks and does, and for fawns, young and mature deer. So, how can a manager best meet all of

these requirements? The forage lists that deer eat are extensive, and they vary regionally, locally and annually. For example, some preferred items are more available during wet springs, others during dry years. Some are more available during cool summers, others during warm years. The key to meeting the deer herd's demands is diversity in your habitat management program.



Source: Dr. David Hewitt, Texas A&M-Kingsville

It's important to remember that a property's potential for deer habitat is not fixed. In forested regions, forest management techniques can be used to increase high-quality deer forage. You want a diversity of forest types and age classes interspersed across the habitat. Clearcuts and seed-tree or shelterwood cuts create abundant food and cover at ground level. These cuts should be laid out in strips, checkerboards, or irregularly shaped patches to maximize edge. Fuelwood or small patch cuts also create high-quality habitat. These selection cuts should be by individual tree or 1 to 5 acres in size and scattered throughout your property. Brush piles created from slash provide shelter for deer and other wildlife and will protect new seedlings from being browsed. Managers can promote stump sprouts and enhance hardwood leaf production by conducting timber harvests or fuelwood cuts during winter. Browse production in these stands can be extensive, and it contains moderate energy and protein contents. The key is that it's available continuously.

The importance of mast cannot be overstated. Many think of mast being most important during autumn as acorns and apples become available, but many soft mast species such as blackberry and raspberry are available during summer in early successional forest stands, and these are extremely important components of high-quality forage. Mast contains high energy and/or fats, but the drawback is sporadic availability.

"Old field" habitats are important, as they provide food and cover. Proper management of this habitat type produces escape, bedding, thermal and fawning cover as well as abundant forbs for forage. Old fields can be maintained by prescribed fire, seasonal disking, rollerchopping, fertilizing, herbiciding, or a combination of techniques. Forbs have moderate to high energy and high protein, and most are preferred species. The drawback is they are limited to specific habitat types.

Finally, your food plot program should supplement the native vegetation management. You should design your food plots to provide food as close to year-round as possible. A well planned program that includes a mix of cool-season perennials, warm-season annuals and cool-season annuals can provide forage for deer across all seasons. For the purpose of this article, spring and summer plots are the focus. Winter wheat in the North, annual clovers in the South, and cool-season perennials in both regions provide some of the earliest high-quality forage in spring. Warm-season annuals such as soybeans, cowpeas, and lablab can be used to provide high-quality forage during summer and even into autumn.

Be sure to focus on spring and summer nutrition so that bucks express their antler growth potential, fawns grow strong bodies, and does can feed those fawns. Spring and summer foods high in protein and energy are necessary to meet these nutritional demands, and they primarily include green leaves and buds of woody and herbaceous plants, soft and hard mast, forbs and legumes (Knowing and recognizing the valuable plants foods in your region is critical, which is why QDMA provides a "Natural Species Profile" in every issue of Quality Whitetails). Diversity is the key, and a mix of low-growing browse, soft mast, forbs and legumes are just what the doctor ordered.

Deer Predators: COYOTES

In the not-too-distant past deer managers south of deer-wolf regions paid little attention to fawn predation rates. Today, this issue is much different. Predator expansion and herd management programs designed to reduce deer populations have recently caused managers to take a much closer look at fawn predation by bobcats, bears, and especially by coyotes.

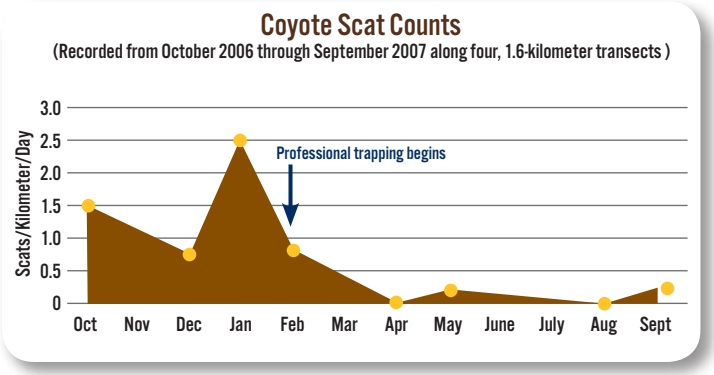
Quotable QDMA:
"The intense predator removal prior to fawning drastically increased fawn survival by 193 to 256 percent!"

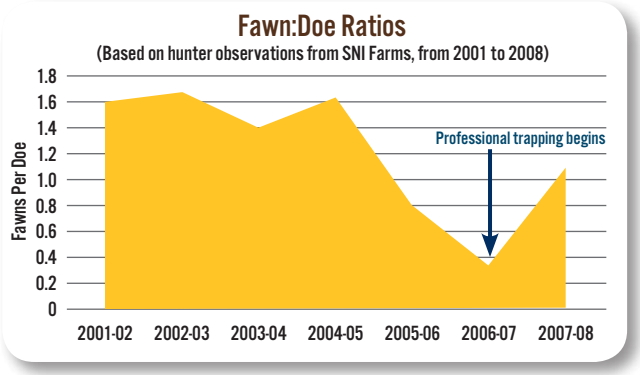
Recent Research

In 2000, Penn State graduate student Justin Vreeland and his colleagues Dr. Duane Diefenbach and Bret Wallingford estimated survival rates and cause-specific mortality for fawns in Pennsylvania. With help from numerous volunteers they captured and radio collared 218 fawns. The Pennsylvania researchers displayed a Herculean effort to amass such a large sample size as prior fawn mortality studies were based on far fewer animals. Justin and his colleagues monitored fawns in two study sites; one was in a forested landscape and the other in an agricultural landscape. The forested site showed evidence of heavy overbrowsing by deer, and low ground (fawning) cover was lacking. Conversely, the agricultural site contained a higher percentage of quality fawn cover. By nine weeks after capture (late summer) 72 percent of fawns in the agricultural site were alive while only 57 percent were alive in the forested site. Predators killed 49 fawns (22 percent) and this was the leading cause of mortality. Notably, 41 of those fawns (84 percent) were killed at the forested site, and of the 31 deaths that could be attributed to a specific predator -bobcats killed 3, coyotes killed 13 and black bears killed 15 fawns! Fawn predation was not high at the agricultural site but it was much higher in the forested site. Interestingly, bears and coyotes took nearly equal numbers of fawns. While coyotes have been blamed for fawn predation for many years, this was one of the first studies that identified a high predation rate by black bears in a forested environment. Black bear predation on white-tailed deer fawns is discussed in detail in a separate article on page 26 in this report.

This research was followed by recent studies in Alabama, Georgia, and South Carolina. University of Georgia (UGA) graduate student Cory VanGilder studied the effects of intensive predator removal on white-tailed deer recruitment in northeast Alabama. Cory and Drs. Grant Woods and Karl Miller inferred predator impacts on a 2,000-acre study site by comparing fawn recruitment data before and after an intensive predator removal program. The study site had been under a QDM program for 10 years and had reduced the deer population through aggressive antlerless harvests. This repeated substantial doe harvest led to a dramatic negative impact on fawn recruitment due to the high ratio of predators to deer. Researchers calculated pre- and post-removal recruitment rates using camera surveys, hunter observation data, and remote web-based cameras mounted over food plots. They also monitored relative predator populations using scat deposition rates and scent-station surveys (see graphs on the facing page). The researchers removed 22 coyotes and 10 bobcats during trapping efforts from February through July 2007. This removal reduced the predator abundance indices to nearly zero immediately prior to the fawning season. It worked! The intense predator removal prior to fawning drastically increased fawn survival by 193 to 256 percent! This study clearly identified that managers couldn't dismiss coyotes and bobcats as having little impact on this site's fawn crop.

PHOTO BY TES RANDLE JOLLY





Another UGA graduate student, Brent Howze studied predation and white-tailed deer recruitment in southwestern Georgia. Brent and Drs. Robert Warren and Karl Miller from UGA and Mike Conner from the Joseph W. Jones Ecological Research Center assessed whether predation was causing the low fawn recruitment rate at the 29,000-acre research center. Deer density on the site was roughly 10 to 15 per square mile and spotlight counts and hunter observation data estimated approximately 0.5 fawns per adult doe in the fall pre-hunt population. Researchers selected two study blocks. One 11,000-acre block was designated as a predator removal zone, and researchers removed 23 coyotes and 3 bobcats between January and August 2008. Most were removed during fawning (June and August). Another 7,000-acre block was used for a control area and no predators were removed. The two blocks contained similar habitats and were 2.5 miles apart. Researchers conducted remote camera surveys to determine pre-hunt fawn recruitment rates, and they estimated 0.72 fawns per doe in the predator removal zone and only 0.07 fawns per doe in the non-removal zone. In other words, 2 fawns were recruited for every 3 does in the predator removal zone, while it took over 28 does to recruit the same number of fawns in the zone where predators weren't removed! This study had a smaller sample size than the Alabama or Pennsylvania studies, but predators clearly had a large influence on the number of fawns that survived to the fall pre-hunt population.

In a related study, Dr. John Kilgo and his colleagues from the USDA Forest Service and Charles Ruth from the South Carolina Department of Natural Resources studied the impacts of coyotes on fawn survival on the Savannah River Site (SRS) in west-central South Carolina. The researchers assessed the potential impact of coyotes by monitoring the survival and causes of mortality of radio-collared fawns. The SRS had 8 to 15 deer per square mile, a balanced adult sex ratio, and the estimated fawn:doe ratio was nearly identical on the SRS and surrounding areas. During 2006 to 2008 researchers captured and monitored 60 fawns. Forty-four (73 percent) fawns died prior to being recruited into the fall population! Bobcats killed 6 and coyotes predated at least 28 fawns. Coyotes killed 47 to 62 percent of all fawns monitored, and coyote predation accounted for 64 to 84 percent of all mortality! Most (66 percent) deaths occurred within the first three weeks of life and over a third (36 percent) occurred within the first week. During 2008, researchers also collected and analyzed residual predator saliva from 22 carcasses to confirm predator species and individual identity. Fifteen coyote-killed fawns provided sufficient saliva and analyses identified 13 individual coyotes. This analysis revealed that, at least on the SRS, coyote preda

Quotable QDMA:
"High-quality fawning cover and a short fawning period help reduce fawn predation rates, but in some cases predators can still exact a heavy toll on the number of fawns surviving to the fall pre-hunt population."

tion is not restricted to a limited number of alpha males. In summary for the SRS study, 4 of 5 monitored fawns died in 2006, 15 of 22 died in 2007, and 26 of 33 died in 2008. This study again emphasized the importance of coyote predation on fawn recruitment rates.

Collectively, these studies demonstrated the game has clearly changed for deer managers with respect to fawn predation. Geographically and numerically expanding predator populations, in combination with more aggressive antlerless harvest rates, are altering the dynamics of traditional harvest models. Increased fawn recruitment rates from presumably healthier deer populations are not being realized in some areas. These recent studies highlight the synergistic role abundant predator populations can play on intentionally (or otherwise) reduced deer populations. High-quality fawning cover and a short fawning period help reduce fawn predation rates, but in some cases predators can still exact a heavy toll on the number of fawns surviving to the fall pre-hunt population. All deer managers are encouraged to take a close look at the long-term trend in fawn recruitment rate for the property they hunt and/or manage when establishing annual target doe harvests. (See the full article on fawn recruitment found on page 31 in this edition of the Whitetail Report).

Coyote Range Expansion Demonstrates Adaptability

Historically limited to the open grasslands, plains, and deserts of the Southwest the coyote has extended its range in all directions – north, south, east, and west. A significant amount of this range extension occurred during the 20th Century, but the trend continues as a reflection of the animal's ability to adapt, changes in the landscape (including forestry and agricultural practices), an increase in prey numbers and availability, relative safety in suburban and urban areas, and human assistance.

Today, coyotes exist from Nova Scotia to Florida and, of course, westward to their original southwestern range. They are and will continue to be an integral cog in the mechanisms of our dynamic ecosystems. Is this the same animal that originated in the Southwest? Have we known the eastern coyote long enough to enable a sound comparison with its western predecessors? The western coyote's reputation as a livestock predator has yet to be realized to the same extent in the East, although reports are on the increase. Research has documented that eastern coyotes will consume nearly anything, although there are a few foods that make up the bulk of their diet depending on regional availability (small mammals, birds, soft mast, and deer).

Coyotes, as top predators, have been shown to have direct and indirect impacts on species diversity of prey and plants. For example, the removal of red foxes can alter the number of their favored prey species, rodents and rabbits, thus ultimately altering plant communities. Relatedly, researchers in Nova Scotia found that the number of deer eaten by coyotes declined with increasing small mammal density. In some regions and/or during some years (e.g., high versus low rainfall) coyote predation has limited white-tailed deer populations. In extreme or persistent cases of coyote predation, deer populations have been regulated. Specifically when coupled with continual negative reproductive conditions, such as in areas with inherently low deer densities, poor habitats, or perpetually severe environments.

Frequency of food items in coyote diets, Cook County, Illinois

Diet Item	Occurrence
Small rodents	42%
Fruit	23%
White-tailed deer	22%
Eastern cottontail	18%
Bird species	13%
Raccoon	8%
Grass	6%
Invertebrates	4%
Human-associated	2%
Muskrat	1%
Domestic cat	1%
Unknown	1%

(Based on the contents of 1,429 scats collected during 2000-2002. Some scats contained multiple items, therefore the percentages exceed 100 percent.)

The Urban Coyote: An Artifact of Our Modern Society

A comprehensive ecological study of coyotes by Stanley D.

Gehrt (School of Environment and Natural Resources, The Ohio State University) was initiated in 2000 in the Chicago metropolitan area, specifically Cook County, Illinois. By February 2006, researchers had captured 253 coyotes and radio-collared 175. Tracking individual coyotes day and night produced over 30,000 locations, making this the most extensive urban study of coyotes ever conducted.

PHOTO BY GIL LACKEY

Gehrt and his colleagues found that urban coyotes have a highly organized social system, similar to their rural counterparts. Territories are defended by packs or groups; however, in protected areas (no shooting or trapping) the group size is typically five to six adults and the pups born that year. By contrast, in rural areas the activities of hunting and trapping usually result in a much smaller group consisting of an alpha pair of coyotes and their pups.
Radio-tracking also revealed that members of packs or groups in this study had home ranges averaging three square miles, whereas solitary coyotes had much larger home ranges averaging 25 square miles. Generally, the home ranges of rural coyotes throughout North America vary as a function of food availability, are much larger, vary seasonally, and differ according to sex with males occupying larger areas.

The Cook County study found that, contrary to popular belief, urban coyote diets are similar to those of rural coyotes. Scat analyses showed that urban coyotes subsist primarily on a diet of small rodents, fruit, deer (fawns), and rabbits rather than garbage and pets, primarily cats.

Ultimately, predation by urban coyotes may serve an important ecological function by preventing an increase in difficult to manage white-tailed deer and Canada goose populations. Although urban coyotes do not take enough adult deer or geese to reduce populations, the impact on fawns and goose nests (eggs) may abate population growth. In concert with the Ohio State University study, colleagues from the Illinois Natural History Survey conducted a fawn survival study in different locations within the Chicago area and found that coyotes killed 20 to 80 percent of the fawns in different populations.

Summary

Coyotes have successfully invaded all areas of whitetail range and they'll be an annual variable in deer management programs. Whether rural or urban and North or South, coyotes are now part of the dynamic relationship between deer and the environment. Coyotes can affect deer herds positively or negatively, so their presence can't be summed with a broad generalization. Their actual impacts will need to be measured and monitored, and deer seasons and bag limits can be adjusted if necessary. The important thing is to realize they are now a player in many deer management programs, and as managers, we need to acknowledge them as such.

Quotable QDMA:

"Whether rural or urban and North or South, coyotes are now part of the dynamic relationship between deer and the environment."

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Fawn Recruitment Rates

Herd monitoring is an important but often overlooked Quality Deer Management (QDM) Cornerstone. Some managers neglect to collect the appropriate data because they're not sure how to use it for management purposes. With a little help in analysis and interpretation, managers can use the data they collect to assess the status of their management program within their respective state, as well as compare how well they stack up to other states and/or regions. To provide a comparison among states, QDMA surveyed state agencies and collected fawn recruitment rate information from 1998 and 2008. With respect to our survey, all states didn't provide the requested information, but most did and the data provided for meaningful comparisons among states and between years.

Quotable QDMA:
"For those that do calculate fawn recruitment, most states' recruitment rates remained similar or declined slightly from an average of 0.88 fawns per adult doe in 1998 to 0.83 in 2008."

Fawn recruitment rate is a measure of the number of fawns per adult doe (1.5 years and older) alive in the fall pre-hunt population. Basically, this index records the number of fawns that survive to approximately six months of age and expresses that number in relation to the number of adult does in the population. The fawn recruitment rate is lower than the number of fetuses per doe and the number of fawns born in the spring, since not all fetuses survive to become fawns and not all fawns survive until fall. This rate is a good measure of a deer herd's productivity, and it is an important factor when determining the biologically appropriate number of does to harvest. Monitoring the fawn recruitment rate also provides insight into herd health, and it alerts managers to potential problems such as high fawn predation rates.

Our survey revealed several states do not calculate this valuable index. For those that do calculate it, most states' recruitment rates remained similar or declined slightly from an average of 0.88 fawns per adult doe in 1998 to 0.83 in 2008. This means less than one fawn was recruited for every adult doe in both years, and it explains why the old adage, "When you shoot a doe you're really killing three deer" is a myth. The fact that actual recruitment rates are lower than many hunters envision can be a difficult concept to grasp because we know healthy, mature does tend to have twins, and they can even have triplets in high-quality habitats. However, some fawns will die before they're recruited into the fall population. They may succumb to disease, be abandoned by their mother, get hit by a car, or be killed by a predator.

Also, the definition of fawn recruitment rate is the number of fawns per adult doe (1.5 years and older). Yearling does are included in this figure, but many yearlings do not have any fawns. Obviously, yearlings with fawns were bred as fawns. In areas such as Iowa, the majority of doe fawns breed and can have fawns as yearlings. Some fawns in Iowa even give birth to twins! However, in other areas such as Delaware or South Carolina, less than 10 percent of the doe fawns breed. That means over 90 percent of the yearling does in Delaware and South Carolina have zero fawns, and that dramatically reduces the fawn recruitment rate.

Let's use the following hypothetical data as an example, starting with the same number of adult does:

Deer Herd A

No. Does	Age (yr.)	No. Fawns Recruited	Fawns per Doe
5	1.5	1	0.2 fawns
10	2.5 and older	12	1.2 fawns
15	All does	13	0.87 fawns

Fawn Recruitment Rate = 13 fawns per 15 adult does or 0.87 fawns per adult doe

Deer Herd B

No. Does	Age (yr.)	No. Fawns Recruited	Fawns per Doe
5	1.5	3	0.6 fawns
10	2.5 and older	12	1.2 fawns
15	All does	15	1.0 fawns

Fawn Recruitment Rate = 15 fawns per 15 adult does or 1.0 fawns per adult doe

In this realistic example, Deer Herd B has a higher recruitment rate simply because a higher percentage of its yearlings had fawns. Notice the 2.5 years and older does recruited the same number of fawns in both herds. If you expand this recruitment rate to larger herds, the difference between 0.87 and 1.0 fawns per adult doe will have significant implications in the rate at which a deer herd will grow and/or for the number of deer that you can harvest annually.

Getting back to the survey; many states have worked to balance deer herds with their habitat and to improve habitat quality during the past decade, so you would expect the 2008 average recruitment rate to be higher than it was in 1998. Since it was lower, it begs the question, "What impact are predators having on fawn recruitment rates?" In some areas predators may have little impact, but recent research in Alabama, Georgia and South Carolina, as discussed on pages 22 to 24, confirms that bobcats and coyotes can significantly reduce fawn recruitment rates.

We asked for statewide averages in our survey, but it is important to remember the average recruitment rate can vary widely within a state. This is especially true for large states with diverse habitats, deer management programs, and snow or rainfall rates. Our survey revealed there is much variation in recruitment rates across the whitetail's range. In 2008, fawn recruitment rates varied from less than 0.5 in Arizona and Oklahoma to 1.2 fawns per adult doe in Illinois and Iowa. That means the average doe in Illinois and Iowa recruits nearly 2.5 times as many fawns per year as the average doe in Arizona and Oklahoma! Given this information, it is not surprising the productive Midwest grows so many bucks and requires such high antlerless harvest rates to keep deer herds in balance with their habitat.

Sportsmen and women can estimate the fawn recruitment rate on the property they hunt/manage with observation data, spotlight counts, and/or scouting camera surveys. Each technique has biases associated with it, but it's more important to estimate this index in the same manner each year so you can monitor trends in the data over time. Compare your estimate to the range reported above (0.5 to 1.2), and then closely examine the direction your trend is moving. Increasing fawn recruitment rates suggest herd health is improving and may permit higher harvest rates. Decreasing recruitment rates suggest herd health is declining and/or fawn mortality is increasing. These figures can help fine tune your annual target doe harvest and help you achieve success in your management program.

Quotable QDMA:

"In some areas predators may have little impact on fawns, but recent research in Alabama, Georgia and South Carolina confirms that bobcats and coyotes can significantly reduce fawn recruitment rates."

Antlered Buck Management

A recent thread on the Forum at QDMA.com focused on antler restrictions. Specifically, Forum users were discussing how many states had them and what restrictions were used. This theme was timely as 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, as we reported in the 2009 edition of the Whitetail Report, at least 22 states had some form of antler restrictions implemented in 2008, and an untold number of managers employed antler or other buck harvest restrictions on private and leased lands. Eight states (Alabama, Arkansas, Delaware, Georgia, Michigan, Mississippi, Pennsylvania and Vermont) had statewide restrictions for at least one buck in the bag limit, while 14 states used them in some wildlife management areas, units, regions, and/or military bases. It's important to remember that buck harvest restrictions are not synonymous with Quality Deer Management (QDM). Rather, they are a strategy to protect a specific age class (generally 1½-year-olds) or age classes of bucks.

Quotable QDMA:
"All types of buck-harvest restrictions have advantages and disadvantages. The key is to implement a strategy devised from local data, and then garner support from the local sportsmen and women affected by it."

Antlered deer management is important because hunters like to shoot bucks, and in the past hunters routinely overharvested the buck segment of populations. This provided much opportunity to experiment with buck harvest restrictions, and today QDM practitioners can choose from a myriad of strategies and tailor one to fit their situation. Many antler restrictions have been used including point, spread and beam-length requirements as well as Boone & Crockett (B&C) score. Additionally, age/body characteristics, buck quotas, earn-a-buck programs, and combination approaches have been used to regulate buck harvest. All restrictions have advantages and disadvantages. The key is to implement a strategy devised from local data, and then garner support from the local sportsmen and women affected by it – whether that is a hunting club, a QDM Cooperative, or a larger area such as a WMA or county. This is often best accomplished by a strong educational campaign informing them about the strategy's costs and benefits. Let's take a closer look at the various strategies for managing antlered bucks.

Antler Point Restrictions

Antler point restrictions (APRs) are a commonly-used technique, and they involve establishing a minimum number of points a buck must have to be eligible for harvest. This minimum number should be established with the aid of a biologist and with local harvest data.

Among the advantages of APRs, they are simple and easy to enforce. The disadvantage of APRs is the number of antler points is a poor predictor of deer age. Yearling bucks can have racks ranging from short spikes to 10 or more 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 with smaller racks. However, because APRs are simple for hunters to follow and easy to enforce, they are the most common buck harvest restriction discussed and implemented by state agencies. Of the 22 states that employed antler restrictions in 2008, 16 employed APRs, and depending on the state, the number varied from one to four points on a single antler.

Antler Spread

Antler spread restrictions involve establishing a minimum antler-spread width a buck must have 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 spread by viewing where the antlers are in relation to the buck's ears when extended. Ear tip-to-tip distance is approximately 15 to 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 old. The advantage of a spread 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 spread restric-

tion include it is slightly more difficult to determine the legal status of a buck in the wild compared to APRs, 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 spread restriction is more biologically sound than an APR and therefore is commonly used on private and leased lands where managers have more control over the program. In 2008, four states (Delaware, Georgia, Kentucky and West Virginia) used antler spread restrictions. None employed them statewide for all bucks, but each used them for at least a portion of their bag limit and/or in at least one area of the state, such as counties or wildlife management units.

Boone & Crockett Score

A third technique is harvesting based on a buck's B&C score. An advantage of this is research shows gross B&C score is highly correlated with relative age in many areas. Therefore, this technique can be successfully used to separate yearling bucks from 2½-year-old and older bucks. Disadvantages include it requires time and practice to become proficient at scoring a live buck in the wild. Since some young bucks have high-scoring antlers while some mature bucks have low-scoring antlers, this technique is less useful for separating 2½-year-olds from 3½-year-olds, or 3½-year-olds from 4½-year-olds, as there can be much overlap in antler scores of middle-aged and mature bucks. This technique is commonly used as part of a combination approach on private and/or leased lands, but is not employed by any state agency.

Age Based on Body Characteristics

A fourth technique is harvesting by age restrictions based on body characteristics. This technique involves establishing the age classes available for harvest, and hunters then use body characteristics – 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. Estimating the age of bucks on the hoof is not an exact science, but with practice, hunters can easily separate bucks into three groups: yearlings, 2½-year-olds, and 3½-plus. The advantage of this technique is 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 specific to their region and habitat and be able to accurately estimate the age of local bucks. This technique is a lot of fun and is very rewarding for true whitetail enthusiasts. Age restrictions are the most biologically sound approach and are used in the majority of intensive management programs.

There is a wide range of strategies for managing buck harvest, from spread restrictions to bag limits. No technique is perfect, but they all have advantages that should be considered.

Buck Quotas and Earn-a-Buck

Two additional techniques are buck harvest quotas and "earn-a-buck" programs. Both of these programs restrict the number – not the age or antler size – of bucks that can be harvested. Buck harvest quotas are similar to what most states 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. Buck quotas can be established on an area or hunter basis. For example, managers can allot a specific number of bucks for a wildlife management unit (WMU), county, property, etc., or limit the number of bucks an individual hunter can harvest. An advantage of this technique is it can prevent overharvest of bucks. Disadvantages are it can result in unhappy hunters if the quota is met early in the season, and it can still allow an overharvest of yearling bucks, especially in areas with high hunter numbers.

Quotable QDMA:

"The disadvantage of antler-point restrictions is the number of antler points is a poor predictor of deer age. 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."

Quotable QDMA:
"QDMA considers buck-harvest restrictions 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?"

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 that 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. Disadvantages are similar to those in buck quota programs. This technique was developed as a strategy for meeting antlerless harvest goals. It simply has a secondary benefit of protecting bucks.

Combination Approaches

As its name implies, this technique combines two or more of the above strategies to manage the buck harvest. For example, it could be a combination of a minimum number of antler points and a minimum spread, or a minimum B&C score and minimum age. It can also be an "either/or" approach such as requiring a buck to have a minimum number of points or a minimum spread. Finally, some managers use an *a la carte* approach where a buck must meet at least one harvest criteria, such as 1) a gross score of 120 inches, 2) be at least 3½ years of age, or 3) have at least a 16-inch inside spread. Combination approaches are generally more biologically sound, flexible and preferred to single restriction strategies. In 2008, three states (Mississippi, South Carolina and Texas) used a combination of antler points and spread, and Mississippi used a combination of antler points, spread and/or main beam length to restrict the buck harvest in at least a portion of their state.

Which is Best?

From a biological standpoint, age restrictions are typically best because they are the most precise and flexible way to achieve management goals. From a practical standpoint, harvesting by age may not be possible initially due to varying skill levels among hunters. However, harvesting by age should be the eventual goal of nearly all QDM programs. Education and experience are the keys to success.

At the property, WMU, or state level there are many ways to protect numbers or specific age classes of bucks. No technique is perfect but they all have advantages.

Which strategy does the QDMA support? We examine each buck harvest restriction on a case-by-case basis and apply 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? If the restriction meets these criteria, it stands a good chance for success. The challenge is to educate hunters on the benefits and limitations of each restriction and achieve broad-based support for the selected technique. Hunter support is crucial, and it can lead a management program to success, or doom it for failure. In general, the most biologically sound techniques provide the most benefits, but all of them can improve a deer management program when applied correctly.

How Many Antlerless Deer Should I Harvest?

Harvesting the correct number of antlerless deer is one of the most important aspects of QDM. Harvest too few antlerless deer and the herd will negatively impact the habitat, the deer themselves and other wildlife species. Harvest too many antlerless deer and the herd will drop below the carrying capacity of the habitat while you unnecessarily remove animals that could provide viewing and harvesting opportunities.

A target antlerless harvest depends on many variables, including deer density, doe age structure, habitat quality, property size, neighboring management practices, adult sex ratio, fawn recruitment rate, seasonal conditions such as extreme winter weather or summer drought, and your deer management goals. This is not a complete list, but it covers the major factors. At first glance it may seem overwhelming, but each piece of data is obtainable. Each item is analogous to a piece of a jigsaw puzzle – the more pieces you have, the clearer the picture. In this case the picture is a deer population, and more pieces of information equate to better management decisions, such as determining the proper target antlerless harvest.

A formal trail-camera survey is one of several tools that can help hunters make density and population estimates. These estimates can then guide the setting of antlerless harvest goals.

The appropriate antlerless harvest rate varies by region. For example, the average property in Florida cannot withstand a comparable antlerless harvest to the average property in Illinois. The appropriate harvest rate also varies within the state and even at the county level. For properties with comparable deer density goals, one with low-quality habitat will likely have a lower target harvest than a property with high-quality habitat, even if the properties are only a few miles apart. This point is obvious, but we state it to show there is not an "exact" harvest rate that can be applied to a specific location or region.

Fortunately, we can calculate a target antlerless harvest. We can also use ballpark harvest rates to establish an initial target harvest in the absence of survey data. Then, the key is to collect enough harvest and/or observation data to refine the target antlerless harvest in future years.

Calculating a Target Doe Harvest

Population models used by many state wildlife agencies across the whitetail's range suggest a harvest of 20 to 30 percent of the adult does in a given population will stabilize the herd. For clarity, this includes adult does only and not fawns. It is important to recognize that many of these models were created over the past few decades during periods of rapid whitetail population growth and expansion. During this period, fawn recruitment was high due to abundant habitat and low predator densities. However, there is a growing body of evidence suggesting that an increasing number of predators such as coyotes, bobcats and black bears, in combination with an increasing number of deer-vehicle accidents and a general trend toward reducing deer populations, is impacting deer populations more than previously believed. Therefore, more conservative doe harvests may be justified in areas with low habitat quality and high predator densities.

If your goal is to increase the deer herd, harvest fewer than 20 to 30 percent of the does. If your goal is to decrease the herd, harvest more than this percentage. You can easily calculate this number

Quotable QDMA:

"Harvest too many antlerless deer and the herd will drop below the carrying capacity of the habitat while you unnecessarily remove animals that could provide viewing and harvesting opportunities."

if you have an estimate of the number of does on the property. Many landowners and managers conduct annual scouting-camera surveys to estimate the deer density. These surveys provide estimates of the number of adult bucks, adult does and fawns on a property. They also provide useful estimates of the adult buck:doe and fawn:doe ratios.

If you do not have a deer-density estimate, there are some general harvest guidelines that can help determine your target antlerless harvest. It is important to recognize these are ballpark rates, and they do not replace a harvest rate calculated from survey data. However, they can be used to set an initial target harvest.

Whether you're in New England, the Southeast or somewhere in between, poor habitats obviously can't feed or support as many deer as good habitats. Lower-density herds also provide lower target levels since there are fewer animals available for harvest. With that in mind, the chart below provides some ballpark figures selected to harvest 20 to 30 percent of the does in a population and stabilize the deer herd.

Not sure about the productivity of the habitat in your area? Check with your state wildlife agency for deer productivity data. You can also contact your local Cooperative Extension office or a wildlife consultant. Your own herd monitoring efforts will help; harvest data such as average weight by age class and lactation rates for yearling does are useful measures of habitat productivity. Monitoring browse pressure on food plots and natural forages, especially with the use of browse exclosures, can tell you much about the size of a deer population in relation to available forage.

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.

What if, like most folks, you manage a small property? This is where Cooperatives can play a big role. QDM Cooperatives provide many benefits to landowners including the opportunity to harvest the appropriate number of antlerless deer. By pooling habitat, deer data, and harvest pressure, managers are more likely to achieve their target antlerless harvest, and all Cooperative members benefit when the right number of deer are harvested (read more about the biological importance of QDM Cooperatives on page 18 of this report).

What does this mean for your management program? Calculate your target doe harvest immediately prior to the hunting season. If your goal is to stabilize the deer population, harvest 20 to 30 percent of the adult does. Determine the actual number by conducting a scouting-camera or alternative survey and estimating the total number of does on the property or Cooperative. Multiply that number by 20 to 30 percent and you have your target doe harvest. If you don't have a density estimate, harvest one adult doe for every 300 to 640-plus acres of low-productivity habitat, one for every 100 to 300 acres of moderately productive habitat, and one adult doe for every 25 to 100 acres of highly productive habitat. Be careful to not harvest more than one buck fawn for every 10 does. The best way to achieve this target harvest is to clearly communicate the importance of reaching it to everyone hunting on the property or Cooperative and to start as early in the hunting season as possible. Good luck, and be sure to collect a jawbone and harvest data from every antlerless deer!

Detecting The Rut Peak

Fetal aging sounds like a technique used by Ob/Gyn doctors and ultrasound technicians, but deer managers can learn a lot about the population they're managing by taking some annual fetal measurements. This practice is not new or limited to the South, as the initial studies on fetal development in white-tailed deer began in the 1940s in New York. However, Joe Hamilton, QDMA's founder and Southern Director of Education and Outreach, led a research project from 1979 to 1983 that ultimately developed the fetal-aging criteria and scale that deer managers throughout North America still use today.

The technique was developed using "crown-to-rump" measurements of known-aged fetuses. Therefore, by measuring the length from the forehead (crown) to the junction of the tail and back (rump) of a fetus on the fetal scale, you can determine the fetus's age. Then, you can use the scale to backdate and determine the date the fetus was conceived, and foredate to estimate the date it would have been born. This analysis is the preferred method for determining the length of and especially the peak of the rut across the whitetail's range, and it allows managers to detect changes in breeding dates with respect to herd management programs.

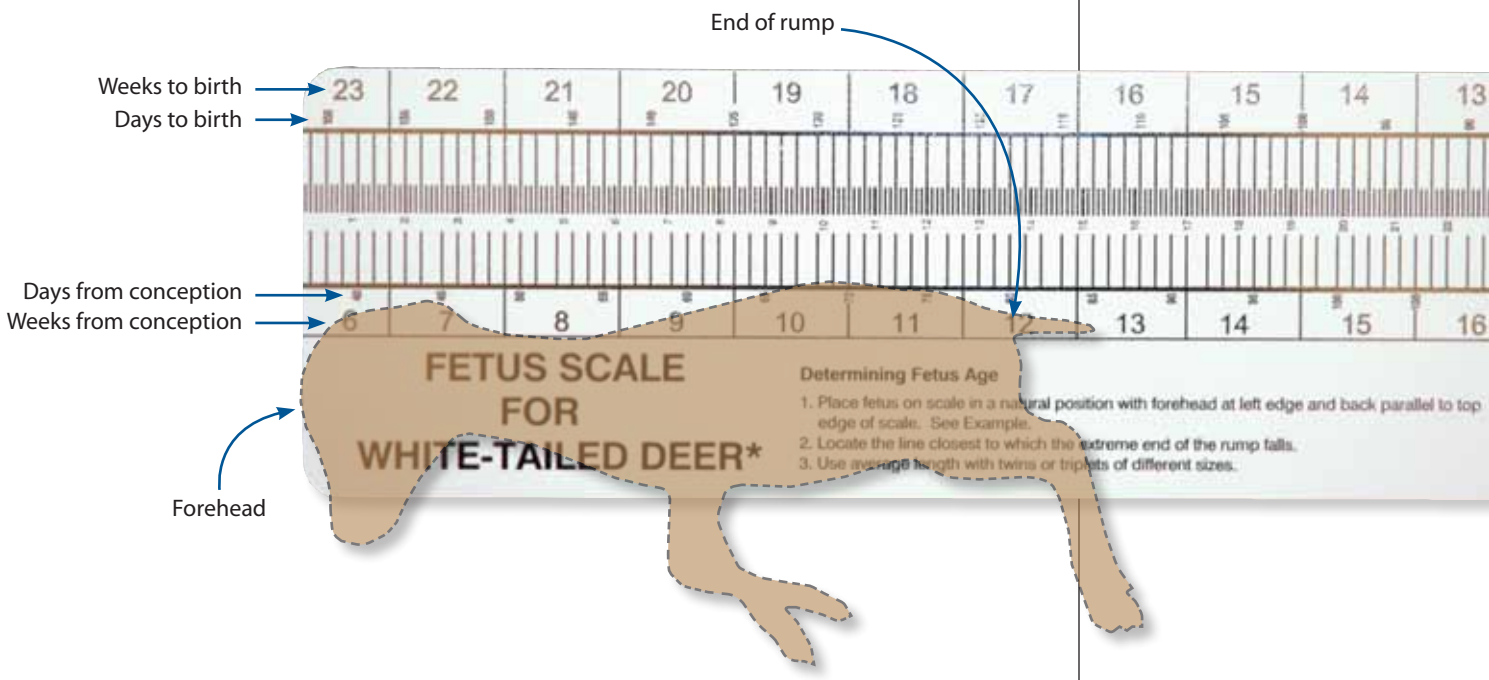
Quotable QDMA:

"In general, as a deer population goes from unmanaged and unbalanced toward a balanced sex ratio, improved adult age structure and increased health, the span of time from first to last conception date will be shorter, and the rut peak will be stronger."

Getting Started

Expensive equipment isn't necessary. All you need is an $8 fetus scale, available from QDMA, and a little knowledge about where to find the fetuses. Fetuses are located in the reproductive tract, and that lies low and at the back end of the abdomen (just above the udder). If you hang a doe for field dressing, hanging by the hind legs makes locating the reproductive tract very easy. It will be hanging below but close to the bladder and above the intestines. If you field dress a doe on the ground, it is easier to locate the reproductive tract before you remove the entrails. That way blood and/or stomach contents (for those who aren't careful with their knife) don't make identification more difficult.

Once you locate the reproductive tract make one incision and cut it away from the body. Then place the tract on a flat surface. The tract consists of the uterus (or birth canal), which branches into halves that each contain an ovary. There may be a fetus in each half of the tract, only one half, or no fetuses. Cut into the tract and remove any fetus(es). You can cut the umbilical cord flush



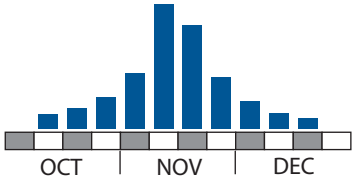
with the body. It's that simple, and it's even easier than pulling a jawbone. However, make sure you collect a fetus and not a cotyledon. Cotyledons are part of the placenta, have a capsule-like appearance and may look somewhat similar to very young fetuses. However, a quick inspection will easily distinguish between the two. Once the fetus is in hand, you can age it and determine conception and birth dates in less than five minutes at camp or on your tailgate using a fetus scale. If you don't have a scale, store the fetus(es) in the freezer for analysis at a later date.

For Example

Let's say you harvested a doe on December 15, and you determined the age of the fetus was 51 days. Refer to the easy-to-use Julian date chart on the back of your fetus scale. Julian dates allow you to calculate the number of days between two calendar dates by simple subtraction. The Julian date of December 15 is 349 (it's the 349th day of the year). This number minus the fetal age in days (51) is 298, the Julian date for October 25. This is the date of conception. The number of days to parturition, or birth, was 147, as determined on your scale. This number, added to the Julian date of the harvest (349) is 496. The Julian date of 496 occurs on May 11, the date the fawn would have been born.

Graphing the Data

Once you determine conception dates, it's time to graph the data. According to Joe Hamilton, a simple bar chart works well, and you plot the number of pregnant does in your harvest data (the sample size) on the vertical axis. Plot the conception dates on the horizontal axis and group them on a weekly basis. This chart will reveal the range of breeding dates and the peak of the rut for your area.



Breeding data charted by week should resemble a bell-shaped curve like the one in this example, with some early and some late breeding on either side of the main peak. The timing of the peak will vary by region.

In all deer populations, there will be does that are bred earlier and later than most, and this occurs for a variety of reasons. Thus, the conception date from one pregnant doe is not a reliable indicator of the rut peak. With more does in your data set, you will gain a more complete picture of the rut.

In general, as a deer population goes from unmanaged and unbalanced toward a balanced sex ratio, improved adult age structure and increased health, the span of time from first to last conception date will be shorter, and the rut peak will be stronger.

Fetal Aging For Everyone?

Fetal aging is a great way to determine the relative length and peak of the rut in your area. You simply need a fetal scale and some fetuses. Unfortunately, that second requirement can be difficult to collect in some locales. Crown-to-rump measurements are an accurate technique for aging fetuses, but fetuses must be at least 35 to 40 days old for the technique to work (and about 60 days old to determine sex). This isn't a problem in areas with late deer seasons and/or early ruts. However, many northern firearms seasons coincide with or immediately follow peak breeding. In some areas of the South, the rut peaks later in the year, near the end of hunting season. Thus most harvested deer, even if pregnant, have fetuses far younger than 35 to 40 days. If this is the case in your area you can still check for fetuses as some does breed early. For example, in Pennsylvania peak breeding generally occurs between November 10 and 20, but Game Commission conception data shows breeding routinely occurs in October. The fetuses from these early-bred does would be old/large enough during the firearms season to determine conception date using the fetal scale.

Many states have late antlerless or primitive weapons seasons where you could collect fetuses from harvested does. A word of caution, however: Don't wait until these late seasons to achieve the majority of your antlerless harvest simply to collect fetuses. The benefits of early antlerless

harvests far outweigh the benefits of collecting 35-day-old or older fetuses. A third option is to collect fetuses from road-killed does during winter or spring. This option is a little messier, and it is illegal in some areas, so be sure to check your local regulations. A final option is to contact your state or provincial wildlife agency and ask for conception dates in your area. This may not be as representative as data you can collect locally, but it's better than nothing.

Is It Flawless?

Researchers in Mississippi recently determined newborn fawns from the Lower Coastal Plain (lower-quality habitat) were lighter and shorter than fawns from the Thin Loess and Delta soil regions (higher-quality habitats) in Mississippi. The researchers also found twins were lighter and shorter than singletons, and males were heavier than females. This research may have implications for the accuracy of the fetal scale. However, since 82 percent of fetal growth occurs during the final trimester of pregnancy, 35- to 135-day-old fetuses (first and second trimester fetuses) may not exhibit the differential growth rates identified in newborn fawns in Mississippi's different soil regions. Fortunately the vast majority of harvested does will have fetuses less than 135 days old, and the technique described above should be accurate for management purposes.

The technique may not be perfect, but it's been successfully used across the whitetail's range for more than 20 years. This is due in part to rigorous testing during development of the criteria and scale. Joe and his colleagues compared measurements between males and females, singletons and twins, fresh and preserved fetuses, and fetuses from 1½- to 3½-year-old does, and found negligible differences. The researchers suggest using the average length of twins or triplets, but otherwise the scale is robust with respect to sex, number and "freshness" of fetuses and mother's age (at least through 3½ years).

How to Age a Whitetail Fetus

1. Place fetus on the fetal scale in a natural position with the forehead at the left edge and the back parallel to the top edge of the scale.
2. Locate the line closest to which the extreme end of the rump falls.
3. Use average length with twins or triplets of different sizes.
4. There are five sets of measurements on the fetal scale. These include a millimeter scale, days from conception, weeks from conception, days to parturition (birth), and weeks to parturition.

Once you know the number of days from conception, flip over to the other side of the fetal scale to determine the date of conception.

5. Locate within a calendar the date the doe was harvested and convert that date to a Julian date (which runs from one to 365 days on one calendar and from 366-730 days on the calendar for the subsequent year). The fetal scale has a calendar that makes this conversion simple.
6. Subtract the age of the fetus in days (days from conception as measured on the scale) from the Julian date noted in No. 5.
7. On the calendar on the fetal scale, locate the date block with the Julian date found in No. 6. This is the date of conception.
8. The procedure for determining date of birth is similar, except days to birth (as measured on the scale) are added to the Julian date noted in No. 5. Two calendars are provided on the scale. Select the calendar that allows you to subtract the days from conception from the Julian date and also allows adding the days to parturition to the Julian date.

Not a Make-or-Break Proposition

Aging versus not aging fetuses won't make or break your management program, but it is a quick and simple technique to collect valuable data about the deer population you're managing. The data can provide insight toward the relationship between the deer population and the habitat's ability to support it, the adult sex ratio, the adult age structure and even herd health. More importantly, it provides solid data on the best dates to be firmly positioned in your favorite deer stand.

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

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.
- 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.

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."

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

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

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."

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?

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."

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

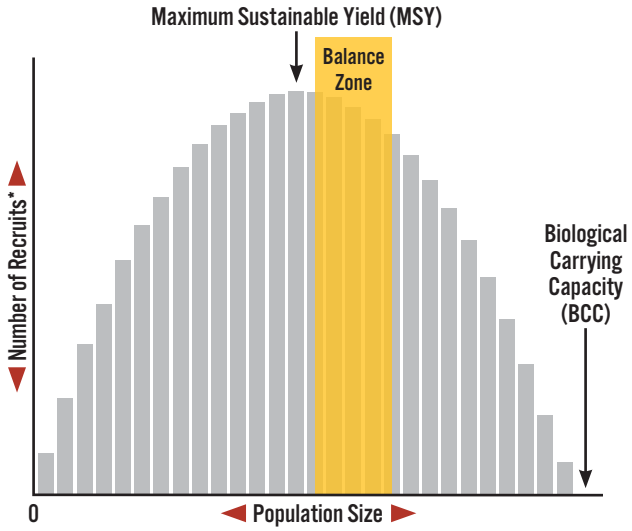
To understand how carrying capacity should play into a QDM program, let's start by separating the term into its most common uses. Biological carrying capacity (BCC) is largely determined by the quality and quantity of available habitat. The BCC is the number of deer a given parcel can support in good 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



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

above this density, resources are less abundant for each deer, so the number of fawns recruited 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, 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.

Mature Bucks: Who Needs 'Em?

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."

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?

TES RANDLE JOLLY

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.

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.

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.

HARDY JACKSON

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 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.

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."

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.

Proper forest management may be achieved by techniques ranging from timber harvesting to

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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.

Quotable QDMA:
"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

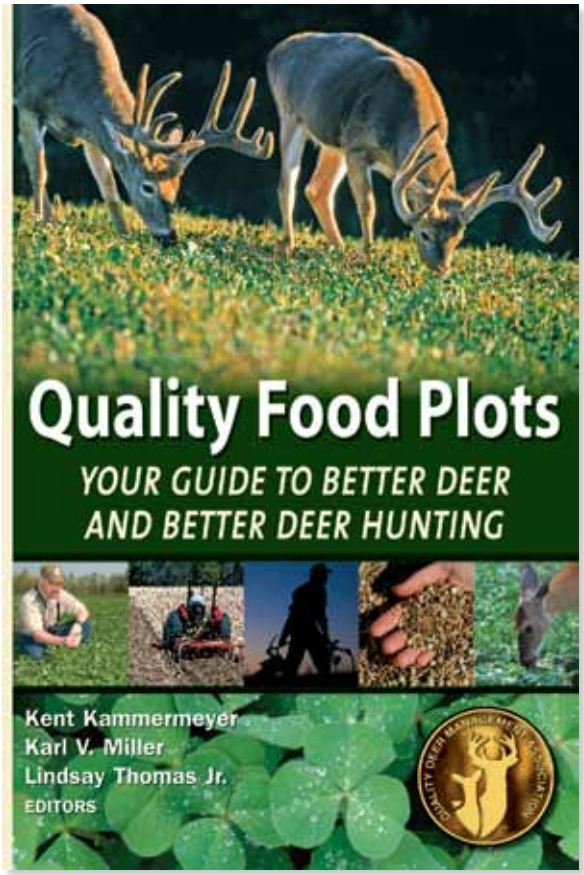
"Old fields" provide food and cover and should represent a minimum of 1 to 5 percent of a property. Some areas in the Midwest and Plains states are dominated by old fields, but many areas in the whitetail's range lack an adequate amount of this habitat type. Proper management of old fields ensures abundant 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-season 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.



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.

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.

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?

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."

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?

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 counterproductive to the QDM program. But this example reveals the widespread confusion among hunters, and mis-information in the media, regarding "culling" and "management bucks."

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.

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 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.

Quotable QDMA:
"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."

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.

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. 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

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.

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.

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.

NOTES

Part Four:

QDMA's REACH Program

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REACH in the NEWS: 2010

QDMA Secures Funding for New Deer Research

In December 2010 the Quality Deer Management Association (QDMA) secured nearly $50,000 in funding for important deer research through the National Fish and Wildlife Foundation (NFWF) and the Help Budweiser Help The Outdoors program. The funds will go to studies identified by QDMA as having the potential to provide useful guidance for managers and hunters working to improve whitetail populations and their habitat.

Does the presence of mature bucks in a deer population suppress rut activities by younger bucks and improve their health? A study at South Dakota State University will attempt to further examine this connection and its implications for deer hunters. If mature bucks have this effect, then younger bucks would experience less rut-related exertion before they are physically mature, perhaps increasing winter survival rates and reducing rut-related mortality for immature bucks. This would be one more advantage to producing deer populations with a complete age structure – or numbers of bucks in each age class. NFWF granted $21,200 for the South Dakota State University study.

The second study, to be conducted by University of Tennessee researchers, will examine the long-term effects of prescribed fire on white-tailed deer habitat in mixed hardwood forests like those found throughout the eastern United States. Habitat managers have long known to use prescribed fire to manage pine stands, and the practice is increasing among landowners. However, less is known about the ability and best timing of prescribed fire in hardwood stands to produce desirable forage and cover for deer. The study will compare the short-term and long-term results of burns during different seasons. NFWF granted $26,000 for the University of Tennessee study.

"I am excited that QDMA can help fund these unique research projects," said Kip Adams, QDMA's Education and Outreach Director in the northern region. "Measuring the physiological impact of a deer herd with a balanced age structure will provide critically important information for deer managers. On the habitat side, no study has ever investigated the effects of fire relative to timing of burning in hardwood forests, so this research has tremendous applications to land managers."

Since 2005, QDMA's REACH program has secured more than $350,000 in funding for research projects in more than 20 states – all with practical relevance for deer hunters and managers. For a summary of QDMA-sponsored research projects visit http://www.qdma.com/wp-content/uploads/2010/05/QDMA-Research-Projects.pdf

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. In total, QDMA has secured over $350,000 to support worthwhile research projects in over 20 states.

REACH is working to fund research that provides practical knowledge and benefits to deer hunters and managers.

2010 Research Accomplishments

- Executed a grant from the National Fish and Wildlife Foundation for $37,776 to study the effects of deer population structure and dispersal on disease mitigation efforts. DNA analysis will be conducted at Texas A&M University-Kingsville on deer samples collected in the CWD endemic area in West Virginia.
- Continued a multi-agency project with the U.S. Fish and Wildlife Service National Wildlife Refuge System, National Park Service and Minnesota Department of Natural Resources investigating impacts of human population growth and habitat fragmentation on deer hunting and management.
- Secured nearly $50,000 from the NFWF to study the reproductive ecology of male white-tailed deer and the effects of seasonality of fire in mixed upland hardwoods (see sidebar).

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*.

2010 Education Accomplishments

- Published *Deer Cameras: the Science of Scouting*, the most comprehensive book on conducting trail camera surveys (see sidebar).
- Conducted over 250 educational events in nearly 30 states and 2 Canadian provinces.
- Hosted the 10th Annual QDMA National Convention and Whitetail Expo.
- Sold 1,000 copies of Cyber Deer to the Hunter Education Department at the New York Department of Environmental Conservation.
- Published QDMA's 2010 Whitetail Report, an annual report on the status of white-tailed deer, the foundation of the hunting industry in North America (available at QDMA.com).
- Authored chapters in the soon-to-be-released White-tailed Deer Biology and Management and Oak Management textbooks.

QDMA's 2010 Whitetail Report checked the health of the whitetail resource, the foundation of the North American hunting industry.

REACH in the NEWS: 2010

"Deer Cameras: The Science of Scouting"

Trail-cameras are now one of the hottest-selling items in the hunting industry, but few hunters have unleashed their scouting camera's full potential for advanced deer management and hunting. The Quality Deer Management Association (QDMA) has published a book that links science with scouting, allowing trail-cameras users to expose new dimensions of whitetail behavior and population dynamics.

"Deer Cameras: The Science of Scouting" is a 242-page, full-color book with 12 chapters written by several of the nation's top experts in deer management and illustrated with more than 300 trail-camera photos submitted by QDMA members.

A Dream Team of Authors

QDMA selected more than a dozen different contributors who specialize in using trail-cameras for management, research and hunting. They include wildlife biologists, wildlife consultants and a professional wildlife photographer.

Tracking Mature Bucks

QDMA's "Deer Cameras" contains two dedicated chapters that teach you how to photograph elusive mature bucks. You'll learn to predict their seasonal movements using the latest scientific knowledge about home ranges and core areas. Then, use the book's recommended setup techniques to photograph and track mature bucks to enhance hunting success.

The Most Comprehensive Guidance on Trail-Camera Surveys

Trail-camera surveys are simply the most powerful deer management tool you can use that doesn't require professional assistance. Surveys can reveal deer density, sex ratios, age structure of bucks, and even the impact of predators on fawn recruitment. QDMA's "Deer Cameras" covers this method like no other source, with four dedicated chapters that take you all the way through interpreting results and applying them to your deer management decisions and hunting strategies.

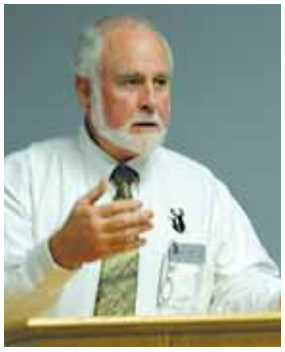
Get the Most From Your Trail-Cameras

Learn how to choose the right trail-camera for your goals, how to capture the highest-quality photographs, and how to monitor other wildlife beyond whitetails. Additionally, learn stealthy setups for monitoring human intruders without cameras being discovered. Special sections even show you how to build your own "homebrew" trail-camera, and a four-page photo gallery helps you diagnose deer oddities you might see.

Like "Quality Food Plots," QDMA's first book, "Deer Cameras: The Science of Scouting" is heavy on photos, diagrams and charts to help illustrate key concepts.

"Deer Cameras: The Science of Scouting" is available for $24.95 plus S/H. To order, visit www.QDMA.com or call (800) 209-3337.

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 nearly 300 legislative and management issues.



QDMA's education and outreach staff engage in policy issues to ensure sound deer management at the state and federal levels.

2010 Advocacy Accomplishments

- QDMA became a conservation partner with Clemson University on a proposed project through the USDA-NRCS Cooperative Conservation Partnership Initiative (CCPI). This unique project offers an opportunity to demonstrate and incorporate wildlife habitat improvement practices into agricultural operations to improve wildlife habitat. At the landscape level, this project has the potential to impact and enhance wildlife conservation across the Nation's agricultural lands (see sidebar).
- Engaged in 38 policy or management issues in 15 states (CT,DE,GA,IN,KY,MD,MI,MN,NH,NY,OH,PA,SC,VA,VT) including:
- Were part of a task force assessing buck age structure management in NH,
- Opposed bill to change baiting laws in GA,
- Supported initiatives to protect yearling bucks in MI, MN and VA,
- Opposed bill to transfer authority of captive cervids from the DNR to Department of Agriculture in OH,
- Supported full funding initiative for agencies managing SC's public resources,
- Supported Sunday hunting initiatives in CT and MD,
- Supported bill to enhance mentored hunting opportunities in PA, and
- Provided input on deer season proposals in numerous states.

REACH in the NEWS: 2010

QDMA-Clemson Partnership

QDMA became a conservation partner with Clemson University and others on a proposed project through the USDA-Natural Resources Conservation Service Cooperative Conservation Partnership Initiative. This unique project offers the opportunity to demonstrate and evaluate land management practices that improve wildlife habitat on private farm and forest lands. These practices will include current USDA Farm Bill conservation programs for wildlife, as well as new and innovative techniques that have yet to be incorporated into Farm Bill programs. There is a tremendous need to illustrate to agricultural and forest landowners, land managers, and natural resource professionals that wildlife habitat improvement practices can be integrated into forests and agricultural lands managed for timber products and agricultural commodities. There is also a need to ensure public support for agricultural production and forest management.

Clemson University's Experimental Forest (CEF) and Agricultural Experiment Station (CAES) will serve as the focus area for the project. The CEF and CAES 20,717 acres are a "working forest and agricultural lands" dedicated to teaching, research, and outreach to better understand and manage agricultural and natural resources for the benefit of society. The CEF and CAES are unique in that, unlike other land-grant universities, the experimental forest and agricultural lands are located adjacent to Clemson's main campus.

At the landscape level, this project has the potential to impact and enhance wildlife conservation across private and public forest and agricultural lands. It also should be of particular significance and applicability to QDMA's nearly 50,000 members throughout North America of which 64% are landowners, who collectively own an estimated 15.2 million acres.

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.

2010 Certification Accomplishments

- Conducted three Deer Steward I courses, and had 126 students from 20 states, 2 provinces and 1 U.S. Virgin Island attend.
- Conducted two Deer Steward II courses, and had 57 students from 22 states and 1 province attend.
- To date, over 400 individuals from 34 states, 3 provinces and 1 U.S. Virgin Island have participated in the Deer Steward program (see sidebar)
- Continued work on land certification program.
- Professionally filmed a Deer Steward I course at Clemson University to provide future educational opportunities.
- Clemson University used a modified Deer Steward I agenda as a wildlife course curriculum.

Through 2010, more than 400 people have participated in the Deer Steward certification program.

REACH in the NEWS: 2010

400 Deer Stewards and Counting!

The Quality Deer Management Association's Deer Steward Certification program is a personal educational experience designed to offer landowners, hunters and natural resource professionals an opportunity to learn from the Nation's top experts about QDM. The first two Levels are courses, Level III is an application; all three need to be taken in succession. By taking both Levels I and II, graduates are able to design and implement their own comprehensive property-specific white-tailed deer management plan. Level III is an honor earned after giving back to the resource over a long period of time, rather than something you can learn in a course.

To date, over 400 individuals have participated in the Deer Steward program, with 232 Level I, 152 Level II and 19 Level III graduates, representing 34 states, three Canadian provinces and one of the US Virgin Islands. Since 2007, the QDMA has held 11 Level I classes and six Level II classes in the following states: Delaware, Georgia, Illinois, Indiana, Maryland, Mississippi, New York, Pennsylvania, South Carolina and Texas.

To learn more about the Deer Steward Certification program, or about registering for an upcoming course, go to: www.QDMA.com > Programs > Certify.

Hunt – QDMA launched a national mentored youth hunting program, which provides 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. The official name of the program is the QDMA Mentored Hunting Program, and it 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.

2010 Hunting Accomplishments

- Conducted our annual National Youth Hunt in southwest Georgia; ten young hunters from eight states (GA,IA,KY,MI,MN,MO,NC,NY) experienced the time of their lives (see sidebar).
- Numerous QDMA Branches around the country held their own local youth hunts.
- Additional mentors and students engaged in QDMA's Mentored Hunting Program.

QDMA's National Office and Branches introduce hundreds of youths to safe, ethical hunting each year.

REACH in the NEWS: 2010

QDMA's 2010 National Youth Hunt

Like most conservation organizations, QDMA holds special youth hunts throughout the nation every fall – those organized and held by our volunteer Branches, who reach hundreds of youngsters annually. As an extension of the REACH Program, the QDMA National Office conducts a National Youth Hunt as well and invites each Branch to nominate a young hunter from their region. Selection priority goes toward youngsters with a desire to hunt but who have little or no opportunity or access to hunting or who are deserving for other reasons. This year's call for nominations was answered overwhelmingly, with more submissions, by far, than the National Office has ever received. From the names, 10 young hunters were chosen to attend.

For the National event, QDMA strives to create a true "dream hunt" for attendees, who come from all over the nation. To do this requires the support of a number of sponsors, volunteers and other contributors from outside the organization. This year's primary benefactors included Plum Creek Timber Co. and Remington, but many other supporters played roles, including the nominating Branches, who offset travel expenses for their nominees and parents/guardians.

For the fourth year running, the U.S. Army Marksmanship Unit (AMU) out of Fort Benning, Georgia, was an overwhelmingly generous partner in QDMA's National Youth Hunt. Several of our nation's top military marksman – including active-duty snipers and Army marksmanship instructors – worked individually with each youth hunter to teach safe and accurate use of the Remington Model 770 .243 bolt-action rifles used in the hunt.

Given these and other contributions to the event, and a weekend with great weather and good hunting conditions, the event was a huge success. Complete coverage is included in the December 2010 issue of Quality Whitetails magazine, and you can see photos at QDMA's Facebook fan page (www.facebook.com/theqdma).

For more information on the Hunting Heritage arm of REACH or QDMA's mentored hunting program visit http://www.qdma.com/programs/hunting-heritage/.

REACH Donors

QDMA's REACH program is made possible in large part by the generous donations of many of our supporters. Numerous people and groups make donations each year. Below are the names of those who donated to QDMA in calendar-year 2009 (the most recent year available as a complete list at press time for this report). QDMA is grateful to these donors for their past support, which makes it possible for QDMA to continue pursuing our research, education, advocacy, certification, and hunting goals.

2009 Honor Roll of Donors

The following were generous donors during 2009 to QDMA's REACH Program or Endowment Fund.

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Chip West II
Thomas L. Whaley
Tom L. Wilson
Patricia A. Wright
Gary A. Wylie

Numerous other individuals and companies made donations of products or services to QDMA fundraising events in 2009.

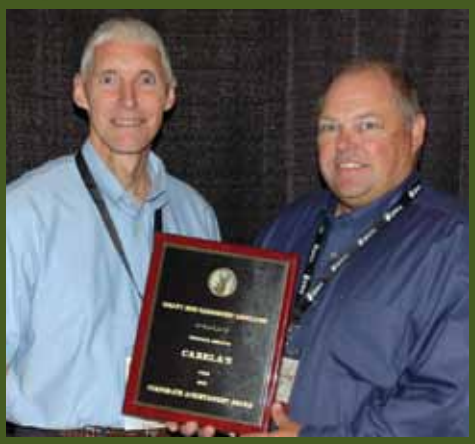
QDMA Conservation and Branch Awards

Agency of the Year

In 2010, QDMA named the Georgia Forestry Commission (GFC) the Agency of the Year for its outstanding and proactive approach to providing educational and technical assistance to wildlife managers. GFC routinely establishes partnerships with organizations like QDMA to enhance the educational missions of all involved. GFC Director and State Forester Robert Farris (far left in photo) and GFC Stewardship Coordinator Buford Sanders accepted the award.

"The mission of the Georgia Forestry Commission is to provide leadership, service and education in the protection and conservation of Georgia's forest resources," said Robert Farris. "The QDMA has similar conservation and education goals, and together we're working with private landowners to ensure that Georgia maintains healthy, sustainable forests that not only provide quality deer habitat, but also many benefits for society including clean air, clean water and abundant forest products for generations to come. I encourage all QDMA Branches to reach out to your respective state forester to find how you can best work together to conserve and enhance your forestlands. We are honored to be named QDMA's Agency of the Year, and we thank QDMA for their outstanding partnership!"

Bob Humphrey (right) of Maine was named the ***Signpost Communicator of the Year***. As a columnist for *Petersen's Bowhunting* and contributor to many other publications, Bob has helped promote accurate information about the QDM philosophy. Bob accepts his award from QDMA CEO Brian Murphy.



Cabela's won the 2009 ***Corporate Achievement Award*** for their long-standing support of QDMA. Randy Moeller (right), Cabela's Marketing Manager, accepts the award from QDMA-Canada Board member Steve Storie.

Dr. Dave Guynn (left) of South Carolina received the ***Joe Hamilton Lifetime Achievement Award***. Dave is a retired wildlife professor from Clemson University, a member of the QDMA Board, and a staunch supporter of QDMA since its inception. The award was presented by Joe Hamilton (right).

QDMA's shipping specialist Connie Popov (right) was voted by her co-workers in the National Office as QDMA's ***Employee of the Year***. Connie received her award from QDMA Board member Jerry Martin.

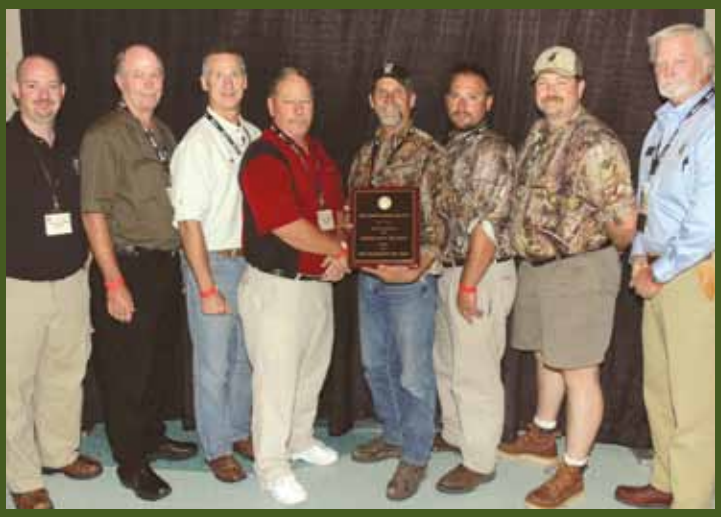
Ambassador Award

The Ambassador Award is given to individuals who have been outspoken and long-time advocates and supporters of QDMA. The second-ever recipient of this award was Peter Stuart of Australia (left in photo). Joe Hamilton founded the QDMA as a North American model of the Australian Deer Association (ADA), and Peter was instrumental in assisting Joe and supporting QDMA in its early years. He has provided many years of service to QDMA since then. Peter could not attend the National Convention, so Joe presented the award at a special ceremony when Peter recently visited the United States.

Arthur Dick (right) of North Carolina earned the ***Al Brothers Deer Manager of the Year*** award (non-professional) for 2009 for outstanding habitat and deer management success on his hunting property. Arthur accepts the award from QDMA Board member Dr. Dave Guynn.

Steve Shea (right) of Florida, wildlife biologist with the St. Joe Company, received the 2009 ***Al Brothers Professional Deer Manager of the Year*** award. Steve is a long-standing supporter of QDMA. Steve accepts his award from QDMA Board member Robert Manning.

The Central Louisiana Branch took home the ***Fundraising Branch of the Year*** award. Their 2009 REACH banquet raised $35,759 in net proceeds. (L to R) Regional Director J.B.Wynn, Darren Boudreaux, Ceil McCann, Dayton McCann, Phyllis Stevens, Bob Stevens, and QDMA Board member Fred Pape.



The Derby City Branch of Louisville, Kentucky, took home the ***New Branch of the Year*** award for their numerous outreach programs in their first year. (L to R) Regional Director Brian Nentrup, Pete Blandford, Steve Daniels, Jack O'Neil, Ed Morris, Glen Carlisle, Tony Lawson, and QDMA Board member Robert Manning.

The Bachman Valley Branch of Maryland earned the ***Educational Branch of the Year*** award for 2009 for outstanding and diverse educational programs. Their president, E.W. Grimes, is shown here doing a live radio interview to promote QDM.

Joe Holt and Nicole Garris of the ACE Basin Branch of South Carolina accept the ***New Fundraising Branch of the Year*** award for raising the most for REACH of any new Branch in 2009.

Alan Brock, president of the Midlands Branch in South Carolina, was named ***Volunteer of the Year***. His tireless efforts resulted in his Branch winning two awards for their achievements.

Kevin Graves (right) of South Carolina was named QDMA's ***Regional Director of the Year***. With Kevin's guidance, Branches in North and South Carolina and Virginia achieved much in 2009. He receives his award from QDMA Board member Robert Manning.

The Midlands Branch of South Carolina took home two Branch awards this year: the big one, ***Branch of the Year***, and, for the second year in a row, ***Branch Sponsor Recruiter of the Year*** for recruiting 70 sponsors for their 2009 banquet. (L to R) QDMA Board member Louis Batson, Sydney Brock, J.W. "Snooky" McCullar, Whitney Brock, QDMA Board member Robert Manning, Alan Brock, ands Regional Director Kevin Graves.

A perennial regular at the awards presentation, this year the Cape Fear River Branch in North Carolina won ***Branch Event of the Year*** for their "QDM for Kids" event at the Dixie Deer Classic. (L to R) Regional Director Kevin Graves. Taylor Pardue, Steve Guyton, Arthur Dick, Guy Gardner, Judy Gardner and QDMA-Canada Board member Steve Storie.

Major QDMA Branch Events from 2010

Minnesota–Prairie to Woods Whitetails Branch of QDMA holds its 3nd annual Spring Deer Expo

In March 2010 the Prairie to Woods Whitetails Branch of Central Minnesota held its third annual Spring Deer Seminar. Deer hunters from around the area enjoyed seminars on whitetail nutrition, food plots, deer sociology and proposed changes to Minnesota deer hunting regulations. Speakers for this event were Kip Adams-QDMA Biologist, Marrett Grund-MN Farmland Deer Project Leader and Jim Vagts- Bluffland Whitetails Association. The event also included exhibitors, games, raffles and official antler scoring. As a bonus each of the QDMA members received their choice of food plot seed or mineral for coming to the event. The local Boy Scout troop served dinner and was rewarded with over $400 in proceeds from the event to use for their special projects! Over 250 deer enthusiasts attended the event and 47 new QDMA members were signed up over the weekend making this another successful event for the Prairie to Woods Whitetails Branch!

Oklahoma–Green Country Branch NASP

The Green Country Branch is excited to announce that in the month of February they presented Saint Catherine Catholic School with a check for $1,500 to help fund the National Archery in the Schools Program (NASP). The 2009 QDMA president Danny Cary was excited about getting NASP in Green Country Schools. Unfortunately Danny passed away in July and wasn't able to see the results of his hard work. But the Branch's new Vice President Jim Gibson and Treasurer Scott Thomas were there to present the check to Michelle Anthamatten from the Saint Catherine School. Also to share in the excitement was Danny's wife Terri and his 2 young daughters Whitley and Phalen. The money was raised from an annual banquet and various fund raisers put on by the association throughout the year. The Danny Cary Memorial fund also helped to sponsor this program. The Green Country QDMA's new goal is to help fund 2-3 more schools in getting the Archery in the Schools Program started this year. They are already working with the Bixby School District to get it started in their high school.

West Central Illinois Branch Tree Program Partnership

Members of the West Central Illinois Branch signed up to participate in the "Million Tree Program", put on by the Living Lands & Waters Organization. The program's mission is to grow 1 million native hardwood trees, of several species; including oak, hickory, walnut, pecan, chestnut, and pawpaw, over the next 5 to 7 years. The trees are grown from locally collected seed, and are nursed for two years, before being harvested and prepped for transplant. They are then given to volunteers, to plant along rivers and streams in Western Illinois, to help restore native species diversity to what it was 150 years ago. Through the program, the Branch was able to secure more than 3,000 saplings in spring 2010 and with the help of 17 Branch members all of the trees were planted in areas where they would benefit wildlife for generations to come. Plans to participate in this program, in the future, are already underway, and volunteers are looking forward to collecting acorns and other seeds this fall for future crops of trees to be grown on the LL&W Nursery.

South Carolina–Daniel Douglas Jr. Memorial Youth Hunt

The Mid-Carolina REACH Branch held its Second Annual Daniel Douglas Jr. Memorial Youth Hunt on October 29 and 30, 2010. The hunt took place on property owned by Eddie Wilson and several other landowners in Newberry County, SC. Fifteen local youth participated in the hunt, and a total of 14 deer were killed. Previously, on September 25, the Mid-Carolina Branch held a "Day at the Range" where participants spent time learning gun safety, hunting safety/etiquette, and proper shot placement, so they would be well prepared for the hunt. The Branch tries to focus on choosing local kids that wouldn't otherwise have an opportunity to hunt.

North Carolina–Middle School Student Crowned "World Champion" for The Roger Bacon Academy

Stand eleven steps away, check your stance, eye the center of the target, pull the arrow back, feel the tension of the compound bow, take a slow breath, aim and… release. Bulls-eye! For months this has been the regimen for each competitive archery student on The Roger Bacon Academy's (RBA) archery team. And that practice has paid off big time on a global scale at the National Archery in the Schools Program® (NASP®) World Tournament. "We are so proud of the accomplishments of all our archery team students at the NASP® World Tournament," said T.J. Beamer Archery team coach for The Roger Bacon Academy, "but we are especially thrilled with the 'World Champion' ranking of Hunter Johnson." The archery team, only in its first year, did well enough in the National tournament to compete in the NASP® World Tournament. Held in Orlando, FL the tournament invites the best competitive archers from around the world in three divisions of boys and girls competition: elementary, middle school and high school. The RBA team of twelve did well with an overall ranking of 14th - making all the archers on the team in the top 100 of world competition. But stand out Hunter Johnson, a seventh grader at The Roger Bacon Academy's Charter Day School, earned "World Champion" status in the Middle Division by ranking 4th out of all middle school competitors. His scores also were good enough to land him with an overall ranking of 11th out of 900 total competitors in all categories. Total middle schools that have competed to this point in the NASP® are 3,700 archery teams. The RBA Archery team was sponsored for this trip by the Bladen Lakes Branch of the Quality Deer Management Association (QDMA), Windham Distributing, The Roger Bacon Academy and Coastal Habitat Conservancy LLC.

Mid Michigan Branch Holds Ultimate Habitat Day

In August 2010 the Mid Michigan Branch held their "Ultimate Habitat Day" at the Ed Spinazzola farm outside of Gladwin, Michigan. The event was in the planning stage for over 4 years with former QDMA national board of directors Ed Spinazzola directing activities. The event featured cutting edge hunting sites, food plots, native grasses and forestry work. Tony LaPratt assisted with much of the property work and was a featured speaker along with QDMA Chairman of the Board Mark Thomas. The entire presentation along with the talks featured controlling deer movement on small acreage. The day before the event, many QDMA Branches across Michigan pitched in to help set up and hold the event. Over 350 folks attended the event and the Mid Michigan Branch captured right at 300 QDMA memberships. Michigan Branches helping out were the Mid Michigan Branch, Thumb Area Branch, North East Michigan and Central Michigan Branch.

As the Great Lakes regional director Bob Ducharme introduced the speakers, Mark Thomas took center stage and gave a great presentation on managing your property, collecting data, and balancing timber production and wildlife habitat. Tony Lapratt started his presentation next that centered around hunters' actions in accessing the hunting locations and controlling deer movement on a property. Property tours followed with around 150 folks going with LaPratt on a walking tour of the 49 acre wood lot that was being set up to control deer movement, and the others went with Ed and Mark Thomas on the hay ride viewing food plots and Ed's cover and forage blend scattered across the property.

South East Michigan Habitat Day

In August 2010, The South East Michigan Branch held their annual habitat day at the Dan Timmons farm outside of Hillsdale, Michigan. Dan's farm is comprised of 300 acres of mixed habitat including active farm fields, old fields, wood lots, tree plantings, native grass plantings as well as several shallow ponds. Dan had spent the last 15 years working on the property using many government programs to develop the land into his hunting paradise. This was a free event and drew a crowd of over 125 interested individuals. The Branch had arranged for several speakers including several folks from the local NRCS office that discussed some of the government programs available, including Safe Management practices and the CREP programs. The keynote speaker was Jeff Sturgis of "Whitetail Habitat Solutions". Jeff's talk fit in quite well with Dan's property because his topic was "Improving Habitat Diversity." After the talks the Branch prepared hot dogs, brats and chips for the folks to eat, had plenty of QDMA merchandise on hand for sale and then held a walking tour of the property, with Dan talking about the different things he had accomplished over the years with changing the property for better hunting and to attract wildlife to it. In addition to holding an annual habitat day, the South East Michigan Branch also worked hard to develop QDM Cooperatives in the area holding many educational talks at these meetings throughout the year. Each spring they also hold a spring tree and seed sale that has proved quite successful throughout the years. This also gives many local QDMA members a great opportunity to purchase trees and seeds for habitat development at much reduced cost making habitat improvements in the area continually grow.

Louisiana–QDMA's Largest Fundraising Banquet

Having the Nation's largest fundraising banquet is nothing new to the Central Louisiana Branch of Alexandria, Louisiana ,who have won 4 precious 1st place awards for fundraising excellent by a local Branch, but 2010 added a new twist by having a real blowout "Cajun Style". The banquet featured all the usual live and silent auctions, general raffle and 25 item gun board but this year they added a dance for the attendees to enjoy and enjoy they did till midnight! This year's banquet set an all time record of $50,664 net dollars raised for QDMA!

Texas Gun Bash

The Panola County Branch hosted their 3rd annual "Gun Bash" fundraising event in Carthage, Texas and raised $15,064 for QDMA. This year's event featured a guest appearance by Jay Novacek, former Dallas Cowboy football player. Jay graciously signed some footballs and hats that were auctioned off during the event which raised an additional $1,000. The Branch will donate $1,000 in Jay's name to the local 4-H shooting program.

Louisiana–Red River Inaugural Event

The Red River Branch hosted there 1st event in Bossier City, Louisiana with over 240 people in attendance. The event featured a ten gun raffle as well as a large general raffle and bonus raffles which helped raise $14,174 net dollars as well as 189 regular members, 28 sponsor members and 2 life members for QDMA. This being there 1st event there is no telling what next year will produce!

Ohio–Branch Sponsors Physically-Challenged Hunt

The Ohio Valley QDMA Branch sponsored the 2010 Wheelin' Sportsman Hunt on October 9th through October 12th. The event was held at the Seraphrim Ranch along with Real Macoy Outfitter in Adams County, Ohio. This was a unique opportunity for the hunters who can't normally participate in the hunting deer, to get out and enjoy it. Branch President Cecil Collins, Jay Schnarrnberg, and Jeremy Collins (Age 12, son of Ohio Valley President & QDMA Member) attended the event in which 12 physically challenged hunters, from Ohio, New York and New Jersey were involved. The lucky hunters took a total of 9 deer on Saturday and early Sunday morning. "Being involved in an event like this gives you an entirely

new appreciation for being able to hunt", said Branch president Cecil Collins.

Alabama–Lake Martin Banquet

The Lake Martin QDMA Branch held their first REACH Banquet on October 21, 2010. Over 135 people attended the event held at The Shoppes of Queen's Attic in Downtown Alexander City, AL. The evening meal was a catered Low-Country Boil that fit perfectly with the venue's "New Orleans Street" theme. Many locals, businesses and members donated items for the different auctions and raffles helping to raise over $13,600 for the night. Overall, the event was a great success helping to spread QDM throughout the area and bringing in 76 memberships to QDMA.

Georgia–Athens Area REACH Banquet

The GA Piedmont Branch, in a joint effort with the QDMA National Office, hosted a very successful banquet on April 8, 2010. The event was held at the University of Georgia's Georgia Center, and was attended by more than 180 people. Tons of great raffle prizes were featured along with live and silent auctions full of hunting gear, guns, management tools, local artisan's work and UGA paraphernalia.

Ohio–Farmer and Hunter Cooperative

The Wakatomika Creek and East Central Ohio Branches joined forces for a regional Farmer and Hunter Cooperative short course. The purpose of this event was to provide proven and recommended techniques and plans with farmers, hunters and landowners on how to work together in dealing with regional deer populations in order to reduce deer crop damage, balance sex ratios and improve landowner/hunter relationships. There were over 100 people in attendance. The speaker list was quite impressive including Dr. Mike Tonkovich from the Ohio DNR, Erich Long from Drumming Log Wildlife Management, and Brian Murphy of QDMA.

West Virginia–Mountain State Branch Field Day

Led by Scott Limer, president of the Mountain State (WV) Branch, the Branch hosted their first annual field day with great success. A large group of folks in the community came to learn about food plots, deer management and timber stand improvement. Several local vendors as well as state officials with the Division of Natural Resources made this event a success. This is a great start for promoting QDM and the QDMA in West Virginia.

Kentucky–Derby City Double Feature

The Derby City Branch held their first educational seminar and food plot program. The morning began at the LaGrange Community Center with a seminar and slide show presented by Tecomate Wildlife Systems Representative Brian Sheppard. This was a very informative session and Brian provided a first class program. At the conclusion of the seminar, both Brian and representatives from the Ky. Dept. of Fish & Wildlife entertained questions from the attendees. At that point the seminar moved to an area farm, the Old-Hen Hunt Club, for a food plot demonstration and more information. In addition, Jay Rose of Tarter Equipment Co. was onsite and demonstrated numerous items that they manufacture for ATV's, including discs, cultipackers, seeders, chain harrows, etc. As Brian Shepperd provided information on the correct way to prepare and plant food plants, Jay would use the various attachments to provide an excellent visual instruction. Instructions on preparing large plots, 2-4 acres, ATV plots like the logging road that was utilized that day, and a simple hand sprayer, rake, and no-till plot were all demonstrated. There were 41 people in attendance. Boy Scout Troop #306, from St. Margaret Mary Church, provided lunch and soft drinks, and they were able to make some money for the troop in conjunction with the event.

2010 Southeast Regional REACH Conference: Implementing Quality Deer Management

QDMA united hunters, landowners, natural resource professionals, and the public at the Southeast Regional REACH Conference on October 9, 2010. The event was held at Willow Oaks Plantation, a 2,000 acre showcase QDM-property in Rockingham County, North Carolina which clearly demonstrates the potential that the Southeast holds for managing free-ranging quality deer. Participants arriving from five states enjoyed this full-day conference led by experts from QDMA, Clemson University, University of Tennessee, North Carolina State University, NC Wildlife Resources Commission, Edward Fort Nurseries, and Outdoor Underwriters. Society of American Forester continuing education credits were approved for all eligible participants.

The goals of this workshop were to: share practical information on how to implement quality deer management principles; raise discussion of wildlife management issues that are shared by every state across the Southeast, gain insight as to how each state has addressed these biological and sociological issues, and to share lessons learned; introduce a change in procedure to be employed by the NC Wildlife Resources Commission related to evaluation of future deer management proposals in North Carolina, and to examine current white-tail deer research projects in the State. Through hands-on field study, participants examined quality wildlife management planning; compared and contrasted a variety of white-tailed management technique; examined habitat pros and cons; participated in a field examination of hard and soft mast trees beneficial to wildlife; and examined how they can mitigate risk as a land manager.

This event was organized by the North Carolina State Chapter and Cape Fear River Branch of QDMA. Special thanks are extended to Willow Oaks Plantation for providing first-cabin lodging, southern hospitality, facilities, and field tour for this event.

North Carolina–QDMA Extends REACH to Public Schools

2011 will mark the third year that QDMA volunteers from across the Carolinas have developed and delivered conservation education to public schools. Following sixth-grade standard course of study, more than 1,600 students have participated in a variety of hands-on wildlife conservation education classes ranging from conservation theory to sporting technique to date. The Cape Fear and Bladen Lakes Branches and North Carolina State Chapter of QDMA organize these events as a collaborative project, recruiting more than 30 wildlife partners from government, NGO, education, and youth organizations. The 2009 and 2010 academic events were hosted by the Dixie Deer Classic wildlife show, sponsored by the Wake County Wildlife Club, who will continue to support this program at future shows. By popular demand a similar event is now being developed by QDMA volunteers for the Cape Fear Wildlife Expo, Wilmington NC, March 18-20, 2011 (www.capefearwildlife-expo.com). Sponsored by Time Warner Cable, "Kids Gone Wild" will feature 12 academic topics introducing students to native wildlife, raptors, wolves, snakes, coyotes, fish and habitat issues. Students will also examine the science behind the digital code and explore careers related to wildlife. A wildlife scavenger hunt and a series of sports-related workshops are also being organized by QDMA at this three-day event, including launch of a hunter recruitment program "Hunting 101" intended to spark enthusiasm for those new to the outdoors and the hunting sports.

North Carolina–Hunter Education Mentoring Program Supports Hunter Recruitment and Retention

Each year thousands of new hunters enroll in hunter safety classes, taking that first important step to the field. These new hunters quickly learn that they are only at the beginning of a life-long learning adventure. Without the benefit of a mentor, lack of opportunity and lack of experience takes its toll. Many of these men, women, and children, who each hold a keen interest in hunting, do not know where to turn to begin learning. Members of the Cape Fear River Branch of QDMA located in the piedmont of North Carolina recognize that the first few years of a hunters' experience are critical in terms of retention and are passionate about ensuring that these new hunters succeed. The Cape Fear River Branch has developed a year-long program initially called "QDM for Kids" to support this need. Through multiple field events, marksmanship classes, hunter safety education classes, and a variety of hunting experiences, participants learn though a positive, safe, and educationally-based program that teaches basic hunting technique, practical wildlife conservation and habitat preservation, and the responsibilities of an ethical sportsman. The program name "QDM for Kids" turned out to be a misnomer, however, for as many adult men and women seek to participate in this program as do kids. Entire families get involved in this Hunter Education Mentoring Program, as a matter of fact. Parents, even if they choose not to hunt, are asked to actively participate, so that they may continue to support their children's interest. Now in its fifth year, the "Hunter Education Mentoring Program" enjoys a waiting list, but continues to seek every opportunity to encourage all new hunters who inquire. "It takes a hunter to make a hunter" so the old adage goes. All hunters are encouraged to do their part. As any one of the qualified mentors of the QDMA Hunter Education Mentoring Program can attest, there are few volunteer opportunities that a hunter will find to be more rewarding.

North Carolina –The Big Doe Roundup

Developed as an Eagle Scout project by then 16-year old Will Fisher, the Big Doe Round-up gets youth involved in the hunting sports, continues to provide a major source of funding to Boy Scout Troop 600 programs in Bladen County, North Carolina, offers sportsmen an opportunity to give back to their community, and has provided more than 25,000 meals through a local food shelter since its inception nearly five years ago. An avid hunter and QDMA member, Will understood the importance of taking does early in the season. Encouraged by Howl Clark of the Bladen Lakes Branch of QDMA, Eagle candidate Will Fisher set out to make a difference. Partnering with the Bladen Lakes Branch of QDMA, Boy Scouts sell Big Doe Roundup contest entry tickets through Scouting events and at Bladen Lakes REACH Banquets. One weekend in October is then dedicated to this effort. Hunters from all over the State are eligible to participate. All doe are brought to a central check point donated by the Gold Club managed by Wendell H Murphy, Murphy Family Ventures LLC for weigh in, and then field dressed by the Scouts. Thanks to Clarkton Processing Company, processing costs are kept to a minimum. Processing fees not subsidized are paid by the Bladen Lakes Branch of QDMA, enabling nearly all contest fees to be returned to Boy Scout programs. One thousand twenty eight pounds of venison were collected in 2010. Will is now a full-time student at NC State University, but continues to support this program as his schedule allows. Howl Clark and Mark Gillespie, Boy Scout Troop 600 Leaders now carry on this project, getting all of their Scouts involved. Hunting heritage, harvest goals, community service, and quality venison donated to those who need it most are all accomplished by this project which could be implemented anywhere in the nation. Think about it. The power of one youth's commitment has really made a difference in Bladen County. This difference could be made in your community as well.

Contact a QDMA Branch Near You

Branch Name	Town	State	Branch Contact	Phone	Email
AL State Chapter	Birmingham	Alabama	Philip Hester	256-318-2971	phester1@herc.com
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Lake Martin Branch	Alexander City	Alabama	Jerry Brown	256-839-5154	brown3331@bellsouth.net
North Central Arkansas	Cherokee Village	Arkansas	Rick Rickelman	870-297-3611	ncabqdma@centurytel.net
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Thumb Area Branch	Bad Axe	Michigan	Paul Plantinga	586-215-9678	thumbqdm@avci.net
West Central Michigan	Ravenna	Michigan	Dave Bopp	616-675-5250	dbopp@gmail.com
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Praire 2 Woods	Alexandria	Minnesota	Dean Revering	605-880-1662	srevering1662@charter.net
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Other 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 at special reduced rates. 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 Matt Ross at (518) 280-3714.

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.

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