

2006 Connecticut Deer Program Summary



Bureau of Natural Resources / Wildlife Division
Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127
860-424-3011
www.ct.gov/dep

Department of Environmental Protection
Gina McCarthy, *Commissioner*
Bureau of Natural Resources
Edward C. Parker, *Chief*
Wildlife Division
Dale W. May, *Director*

Prepared by
Andrew M. LaBonte, *Wildlife Technician*
Howard J. Kilpatrick, *Deer/Turkey Program Biologist*
Winnie Reid, *Administrative Professional*



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Introduction

This booklet is the 26th in a series since the passage of the White-tailed Deer Management Act of 1974, reporting on the status of the white-tailed deer resource in Connecticut. It summarizes white-tailed deer information for 2006, including changes in deer management regulations, harvest statistics, research activities, and population dynamics of Connecticut's deer population. Connecticut's Deer Management Program goals are: 1) to maintain the population at levels compatible with available habitat and land uses, and; 2) to allow for a sustained yield of deer for use by Connecticut hunters. The program has focused on the stabilization of zonal deer populations at moderate densities for the best long-term interest of the deer resource, native plant and animal communities, and the public. Regulated deer hunting has proven to be an ecologically sound, socially beneficial, and fiscally responsible method of managing deer populations. Deer Program efforts have focused on increasing harvest of antlerless deer, coordinating controlled hunts for overabundant deer herds, assisting communities and large landowners with deer management issues, and research and management of urban deer populations.

Pursuant to the goal of reducing deer populations in overpopulated areas, aggressive management strategies are being implemented in areas with high deer densities. Strategies include the issuance of free replacement antlerless tags (1995), changes in state law to allow hunting over bait (2003), implementation of sharp-shooting programs (2003), extending the archery season to include the month of January (2003), and development of an earn-a-buck program (2005). The replacement antlerless tag program, which was initiated in 1995, allows hunters in deer management zones (DMZ) 11 and 12 to harvest additional antlerless deer, with the goal of increasing the harvest of does. In 2003, hunting over bait was permitted in DMZs 11 and 12 during all seasons on private land. Use of bait in areas where hunter access to private land is limited will increase hunter opportunity and success. Starting in 2005, hunters could earn a free either-sex tag for harvesting a buck after harvesting 3 antlerless deer during the same season. In areas where firearms hunting is not feasible, the DEP stresses the usefulness of bowhunting as a management tool. Communities experiencing deer overpopulation problems may choose to initiate controlled hunts or, under special conditions, may be eligible to implement a sharp-shooting program.

In recent years, town governments have been taking a more active role in managing local deer populations. In 2004, representatives of 10 towns in Fairfield County formed a Regional Deer Management Working Group called the Fairfield County Municipal Deer Management Alliance (www.deeralliance.com). Currently, 15 of 23 Fairfield County towns have joined the Alliance (Bethel, Bridgeport, Danbury, Darien, Easton, Fairfield, Greenwich, New Canaan, Norwalk, Redding, Ridgefield, Stamford, Weston, Westport, Wilton). The Alliance assists towns in establishing deer committees, shares knowledge and experience about managing urban deer with other towns, provides input on urban deer problems so as to influence wildlife policy decision makers, increases public awareness, and provides input for developing long-term solutions to control deer overabundance in southwestern Connecticut.

The booklet entitled *Managing Urban Deer In Connecticut* was revised, updated, and reprinted in 2007. The purpose of this booklet is to assist large landowners, neighborhoods, communities, and town-appointed deer committees with managing deer in urban-suburban areas. The booklet includes information on history of deer in Connecticut, population dynamics, deer management options, case studies of successful urban deer management programs in Connecticut, and guidance on developing a deer management program. It is available upon request by contacting the DEP Wildlife Division's Franklin office (860-642-7239), howard.kilpatrick@po.state.ct.us, or online at http://www.ct.gov/dep/lib/dep/wildlife/pdf_files/game/urbandeer07.pdf

Hunter Notes

Information on dates and locations of hunter education courses can be obtained by calling the DEP Wildlife Division's Franklin office (860-642-7239) or Sessions Woods office (860-675-8130), or on the DEP website at <http://www.ct.gov/dep/hunting>; click on "Hunting/Trapping Classes" on the left tab.

Regulations were enacted in October 2005 prohibiting hunters from transporting into Connecticut any deer or elk carcasses or part thereof from any state where chronic wasting disease (CWD) has been documented:

"Section 26-55-4: No person shall import or possess whole carcasses or parts thereof of any deer, moose, or elk from wild or captive herds from other states or Canadian Provinces where chronic wasting disease has been confirmed, including, but not limited to, Colorado, Wyoming, Utah, New Mexico, Montana, South Dakota, Kansas, Minnesota, Wisconsin, Illinois, Nebraska, Oklahoma, New York, West Virginia, Alberta and Saskatchewan. Any additional states and provinces where chronic wasting disease is confirmed will be published in the Department's annual Hunting and Trapping Guide and on the Department's Web site (www.ct.gov/dep). This provision shall not apply to meat that's de-boned, cleaned skullcaps, hides or taxidermy mounts."

Applications for private land and state land no-lottery deer and turkey permits may be downloaded from the DEP's website, <http://www.ct.gov/dep/hunting>. In the near future, the DEP plans to implement an automated license system to make the process of obtaining hunting licenses and submitting kill cards more convenient.

Regulated Deer Harvest

Regulated hunting is the most effective and cost-efficient method for maintaining deer populations at acceptable densities. During the 2006 hunting season, 11,598 deer were legally harvested and reported (Table 1). This represents an 8.5% decrease from the 2005 harvest. Total deer harvest was slightly lower than the previous 3-year average. Hunters are becoming more aware of and are taking advantage of the replacement antlerless tag program and the January season. However, warm and wet weather on high harvest days (opening days, Saturdays, and Thanksgiving) during the 3-week firearms season and limited snow cover in January likely contributed to the slight decline in harvest rates. The antlerless replacement tag harvest decreased from 628 to 590 deer from 2005 to 2006. Shotgun/rifle hunters accounted for 58.5% of all deer taken in 2006, while archery hunters, landowners, and muzzleloader hunters accounted for 27.2%, 8.3%, and 6.0%, respectively. Harvest varied considerably by season and town (Appendix 1).

Table 1. Deer harvested during Connecticut's regulated hunting seasons, 2005-2006.

Season	Harvest 2005	Harvest 2006	3-year Average Harvest (2004-2006)	% of Total 2006	% Change from 2005 to 2006	% Change 3-year Average to 2006
Archery						
State Land	408	499	445	4.3%	22.3%	12.2%
Private Land	2,598	2,658	2,721	22.9%	2.3%	-2.3%
Replacement Antlerless ^A	408	477	430	4.1%	16.9%	11.0%
Either-sex Tag ^A	19	56	38	0.3%	194.7%	49.3%
January ^B	159	151	173	1.3%	-5.0%	-12.5%
Subtotal	3,006	3,157	3,166	27.2%	5.0%	-0.3%
Muzzleloader						
State Land	186	147	190	1.3%	-21.0%	-22.6%
Private Land	595	550	674	4.7%	-7.6%	-18.4%
Replacement Antlerless ^A	16	10	20	0.1%	-37.5%	-49.2%
Either-sex Tag ^A	0	0	0	0.0%		
Subtotal	781	697	864	6.0%	-10.8%	-19.3%
Shotgun/Rifle						
State Land A ^C	817	973	898	8.4%	19.1%	8.3%
State Land B ^C	334	183	236	1.6%	-45.2%	-22.5%
Private Land	6,474	5,622	6,272	48.5%	-13.2%	-10.4%
Replacement Antlerless ^A	204	103	165	0.9%	-49.5%	-37.7%
Either-sex Tag ^A	15	3	9	0.0%	-80.0%	-66.7%
Subtotal	7,625	6,778	7,406	58.5%	-11.1%	-8.5%
Landowner						
	1,251	959	1,160	8.3%	-23.3%	-17.4%
Total	12,663	11,598^D	12,598	100.0%	-8.5%	-8.0%

^A Replacement antlerless and either-sex tags were available in zones 11 and 12 only.

^B January season is included as part of private land archery total.

^C Includes controlled hunt areas.

^D Includes 6 harvested deer whose sex and location were missing.

Permit Allocation

To reduce Connecticut's deer population growth rate, the Wildlife Division provides opportunities for hunters to purchase multiple deer permits. From 1975 to 1992, permit issuance increased consistently and has remained relatively stable since 1992 (Figure 1). Overall, permit issuance in 2006 (61,410) increased 1.6% from 2005 (60,433) (Table 2). Permit issuance increased slightly for both state (5.8%) and private land muzzleloaders (1.7%). Landowner permit issuance remained relatively stable in 2006 and has fluctuated between 4,898 (1999) and 6,133 (1992) for the past 10 years. Issuance of shotgun/rifle permits in 2006 was similar to 2005. Overall, shotgun/rifle hunters purchased the largest number of permits (46.4%), followed by muzzleloader hunters (24.4%), archers (20.2%), and landowners (9.0%). Archery permit issuance increased 3.2% in 2006, approaching permit issuance levels observed prior to 2003

when all bowhunters were required to take the bowhunter safety course before purchasing any archery deer permit. Sixty-four percent of firearms deer permits were issued for use on private land and the remaining 36% were issued for state-managed lands.

Figure 1. Total deer permit issuance in Connecticut, 1975-2006.

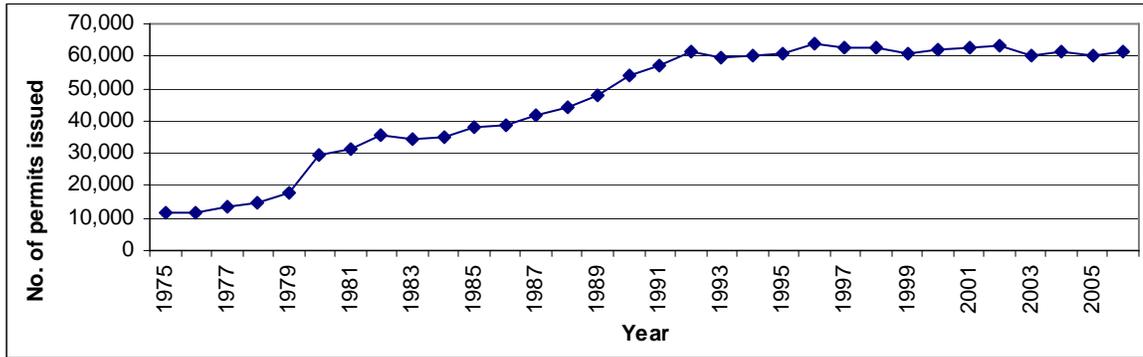


Table 2. Deer hunting permits issued in Connecticut for all regulated hunting seasons, 2004-2006.

Season	Permits 2004	Permits 2005	Permits 2006	3-Year Average Permits 2003-2005	% of Total 2006	% Change 2005 to 2006	% Change 3-year Avg. to 2005
Archery	12,063	12,008	12,392	11,935	20.2%	3.2%	3.8%
Muzzleloader							
State Land	5,441	5,388	5,702	5,348	9.3%	5.8%	6.6%
Private Land	9,148	9,143	9,297	9,025	15.1%	1.7%	3.0%
Subtotal	14,589	14,531	14,999	14,373	24.4%	3.2%	4.4%
Shotgun/Rifle							
State Land A*	6,158	5,981	6,223	6,129	10.1%	4.0%	1.5%
State Land B*	4,200	4,131	4,001	4,106	6.5%	-3.1%	-2.6%
Private Land	18,797	18,237	18,249	18,610	29.7%	0.1%	-1.9%
Subtotal	29,155	28,349	28,473	28,846	46.4%	0.4%	-1.3%
Landowner	5,608	5,545	5,546	5,530	9.0%	0.0%	0.3%
Total	61,415	60,433	61,410	60,684	100.0%	1.6%	1.2%

*Includes controlled hunt permits.

Hunter Success

Hunter success rate was estimated by dividing total deer harvest by total permit issuance and multiplying by 100 (Table 3). Success rates may fluctuate annually, depending on weather conditions, timing of rain and snow storms, fall acorn crops, and deer herd size. Success rate for the archery season reached a record high of 27.8% in 2003, then dropped slightly in 2004 (27.6%) and 2005 (25.0%), and then stabilized in 2006 (25.5%). Success rates for the remaining seasons varied from 2005 to 2006, with the landowner season experiencing the greatest decline and the state land A shotgun/rifle season experiencing the greatest increase. Compared to the previous 3-year average, success rates decreased or remained stable for all hunting seasons in 2006 except the state land A shotgun season. In 2006, private land shotgun/rifle hunters had the highest annual success rate (30.8%), followed by archers (25.5%) and landowners (17.3%). Success rate for the combined muzzleloader seasons was 4.6%. Low success rates are expected because the muzzleloader season occurs after the shotgun/rifle deer hunting seasons.

Table 3. Deer hunter success rates (%) in Connecticut, 2005-2006.

Season	2005	2006	3-year Avg. Success Rate (2003-2005)	Difference from 2005	Difference from 3-year Avg.
Archery					
Combined ^A	25.0%	25.5%	26.8%	0.4%	-1.3%
Muzzleloader					
State Land	3.5%	2.6%	4.3%	-0.9%	-1.7%
Private Land	6.5%	5.9%	8.5%	-0.6%	-2.6%
Combined	5.4%	4.6%	6.9%	-0.8%	-2.3%
Shotgun/Rifle					
State Land A	13.7%	15.6%	14.1%	2.0%	1.5%
State Land B	8.1%	4.6%	5.7%	-3.5%	-1.2%
Private Land	35.5%	30.8%	34.6%	-4.7%	-3.8%
Combined	26.8%	23.8%	26.9%	-3.0%	-3.1%
Landowner	22.6%	17.3%	22.2%	-5.3%	-4.9%
Average^B	16.3%	18.9%	16.7%	-1.6%	-2.2%

^A Data available only for state and private land combined.

^B Average is based on total number of deer harvested/ total number of permits issued.

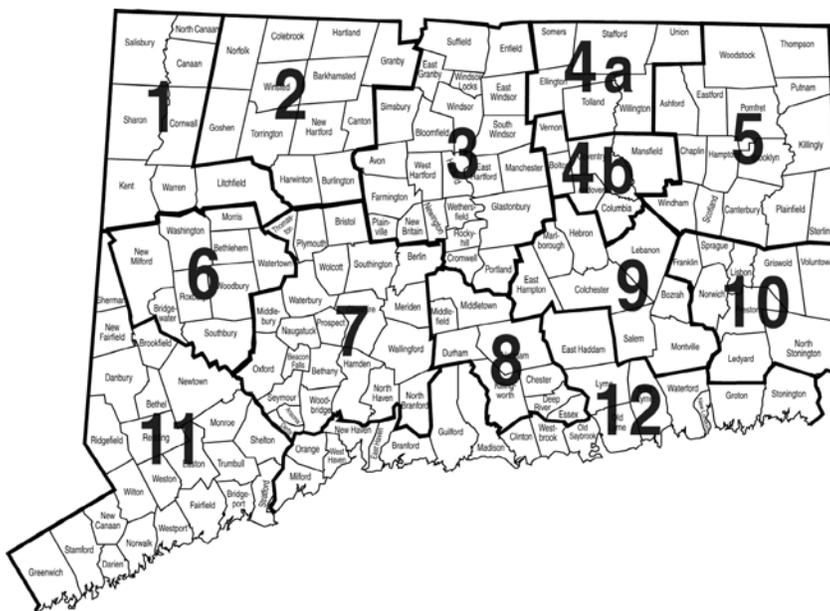
Archery Statistics

About 1 in 4 deer taken during the hunting season was harvested by a bowhunter. Seventy-seven percent (2,444; 2,003 private, 441 state) of the total archery harvest was taken during the early archery season (September 15 to November 16); 8% (278; 248 private, 30 state) was taken during the 3-week shotgun/rifle season; 3.5% (111; 103 private, 8 state) was taken during the muzzleloader season; 5.5% (173; 153 private, 20 state) was taken during the late archery season (December 24 to December 31); and 4.8% (151) was taken during the January season open in zones 11 and 12 on private land only (January 1-31, 2007).

Connecticut Deer Management Zones

To better manage the statewide deer population, data from hunter surveys, regulated deer harvests, and total deer mortality have been recorded and evaluated by deer management zones (Figure 2). Current population status and long-term trends are analyzed for each deer management zone. This approach facilitates the assessment and management of regional deer populations. In 2003, some zones were re-delineated and zone 4 was split into zones 4A and 4B.

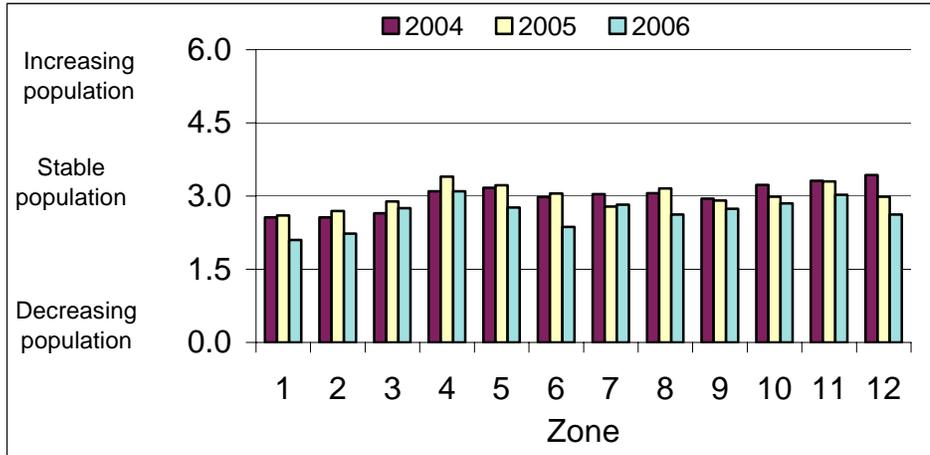
Figure 2. Connecticut's deer management zones, 2006.



Hunter Perceptions of Population Trends

Each year, 10-20% of all deer hunters complete and return their hunter survey card, which includes the question, "How would you describe the status of the deer population from last year to this year?" Hunter perceptions of deer population trends were ranked on a scale of 0 (decreasing population) to 6 (increasing population). Half of the hunters (49%) who responded to the survey believed that the population was stable, 19% believed it was increasing or slightly increasing, and 32% believed it was decreasing or slightly decreasing. Deer management zones 1 and 2 had the lowest average rank (2.1 and 2.2; Figure 3) and zone 4 had the highest average rank (3.1). Zones 4A and 4B and zone 11 had the highest relative frequency of hunters (24%, 36%, 24%) who believed the deer population was increasing. After 7 years of antlerless tag restrictions in zone 4A, hunters are seeing a noticeable increase in the deer population.

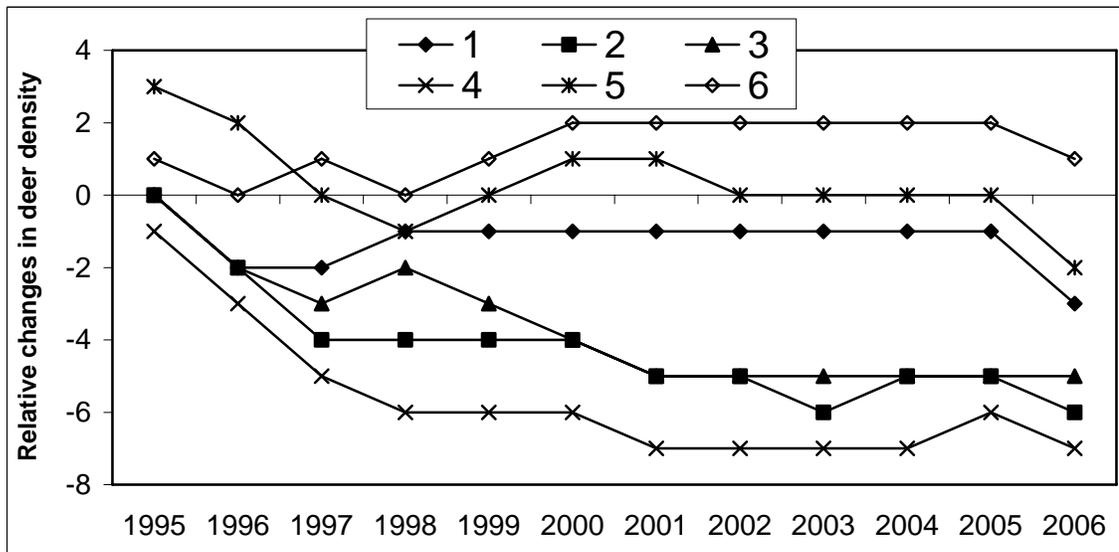
Figure 3. Perception of zonal deer population trends (average rank) by Connecticut's deer hunters, 2004-2006.



Population Trends

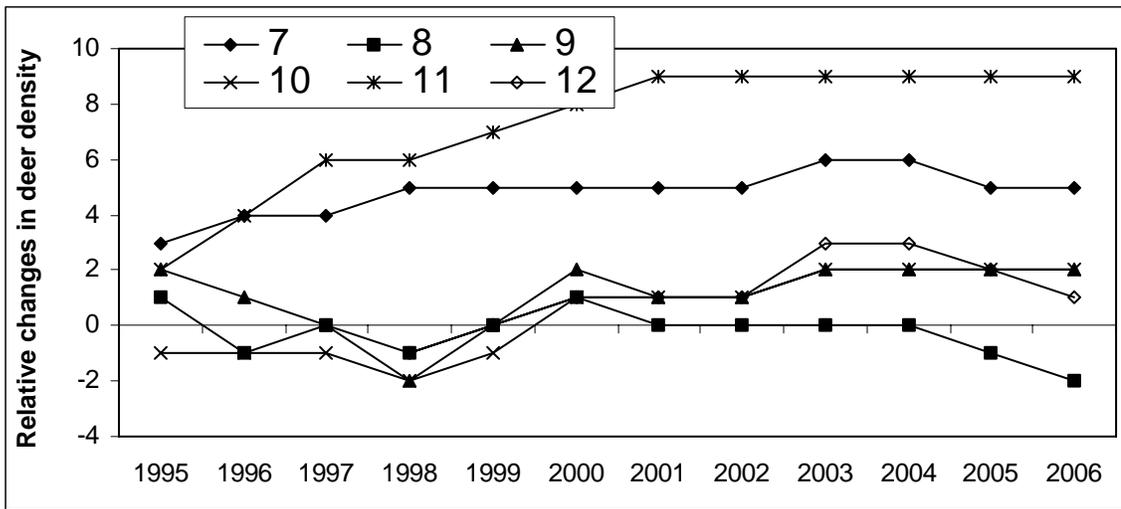
To assess the status of zonal deer populations in Connecticut, hunter perceptions and changes in harvest data (buck harvest/square mile, hunter success, yearling antler beam diameters, total deer mortality/square mile, and roadkills/square mile) were analyzed. This analysis suggests that from 2005 to 2006, 5 zones (3, 7, 9, 10, and 11) had stable populations and 7 zones (1, 2, 4, 5, 6, 8, and 12) had decreasing to slightly decreasing populations (Figures 4 and 5).

Figure 4. Trends in Connecticut deer population growth in zones 1-6 from 1995 to 2006.*



*Horizontal lines represent a stable population relative to the previous year. Lines that project upwards or downwards represent increasing or decreasing populations when compared to the previous year.

Figure 5. Trends in Connecticut deer population growth in zones 7-12 from 1995 to 2006.*



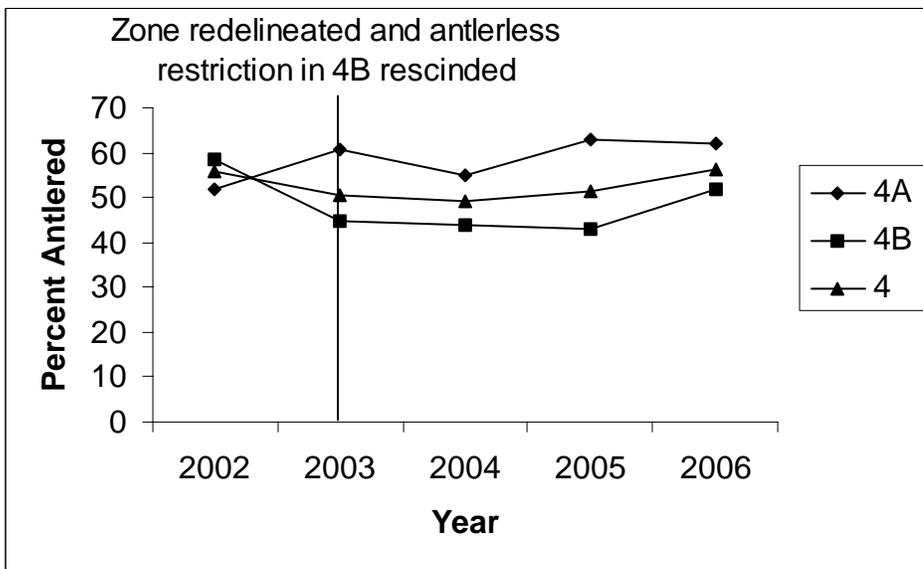
*Horizontal lines represent a stable population relative to the previous year. Lines that project upwards or downwards represent increasing or decreasing populations when compared to the previous year.

Zonal Deer Management

Because deer populations vary across the state, Connecticut developed 12 deer management zones. Management strategies may vary from zone to zone. In zone 4, a 4-year decreasing trend, beginning in 1996, prompted harvest restrictions on female deer in this zone in 1999. During shotgun/rifle and muzzleloader seasons, the antlerless-only tag on 2-tag permits was not valid in zone 4. This restriction resulted in a decrease in the number of does harvested, allowing the population to stabilize. In 2002, deer populations appeared to be stable in the southern portion, but not in the northern portion of zone 4. In 2003, Zone 4 was split into two zones (4A and 4B), allowing each zone to maintain different management objectives. In zone 4A (northern portion), the restriction on the use of antlerless tags was restrained, while the use of antlerless tags was again allowed in zone 4B (southern portion). The town of Union was removed from zone 5 and added to zone 4A.

The percentage of antlered deer harvested was larger for zone 4A (62.2%) than zone 4B (51.9%) in 2006 (Figure 6). This was expected due to the restricted use of antlerless tags in zone 4A.

Figure 6. Percent of antlered deer harvested in zone 4 from 2002 to 2006.



In zones 11 and 12, free replacement antlerless tags and either-sex tags (bonus buck tags) were available during the private land archery, shotgun/rifle, and muzzleloader seasons in 2006. Replacement tags were available in these zones because these regions of the state were experiencing more human-deer conflicts and, therefore, had different management objectives than other regions.

Insight into Deer Hunter Success Rates by Zone

Shotgun/Rifle Season Success

Annual deer harvest is one of many variables monitored by the Wildlife Division to assess changes in Connecticut's deer population over time for each deer management zone. However, without information on hunter distribution and effort by zones, the potential usefulness of this data is limited. To gain insight into hunter distribution and success rates by zone, deer permit applications were modified to include the question, "In what zone do you do most of your deer hunting?" In 2006, 67% (12,235 of 18,249) of private land shotgun/rifle deer hunters answered this question on their application. The relative percent of hunters in each deer management zone was multiplied by total number of deer permits issued in 2006 to estimate total number of hunters by zone. Total number of hunters and total private land deer harvest for each zone were used to estimate deer hunter success rates for each zone (Table 4). In general, higher hunter success rates suggest higher deer density. Of the 12 management zones, most hunting (45%) occurred in four zones (1, 5, 9, and 11). Highest private land deer harvests were reported for zones 1, 5, 9, 11, and 12. Zone 9 had the highest deer harvest per square mile (2.5) and zones 5 and 9 had the greatest density of hunters (6.9 per square mile), but zone 9 had the highest hunter success rate (37%). The 3-year trend in hunter success rates declined for 8 of 12 zones (Table 5). Hunter success rates were lowest in zone 2. In the past, zone 4 had a low success rate due to restrictions on the antlerless harvest. However, increased hunter success in zone 4 over time indicates the deer herd is recovering.

Archery Season

Statewide Success: Based on the number of kill report cards submitted by bowhunters, 1 of 3 (37%) hunters harvested 2 or more deer during the bowhunting season. Bowhunter success rates were highest in zones 11 and 12 where firearms hunting is more limited and the archery season framework is liberal (use of bait, unlimited tags, longer seasons) (Table 6). Based on hunter surveys, the actual harvest rate is higher than the reported harvest rate.

Table 4. Zonal hunter numbers, harvest, and success rates for private land during the 2006 shotgun/rifle hunting season.

Zone	2006 Answered Applications Private Land Shotgun/Rifle	% of Hunters Answered Question	2006 Estimated # of Private Land Shotgun/Rifle	2006 Harvest	Area (sq. miles)	Deer Harvest/ Sq. Mile	2006 Hunters/ Sq. Mile	2006 Success Rate
1	1,149	9.4	1,715	472	293.1	1.6	5.9	28%
2	898	7.3	1,332	288	359.2	0.8	3.7	22%
3	585	4.8	876	271	329.7	0.8	2.7	31%
4	967	7.9	1,442	504	333.1	1.5	4.3	35%
5	2,090	17.1	3,121	1020	454.2	2.2	6.9	33%
6	877	7.2	1,314	355	233.5	1.5	5.6	27%
7	647	5.3	967	276	318.1	0.9	3.0	29%
8	638	5.2	949	261	156.5	1.7	6.1	28%
9	1,136	9.3	1,697	623	244.9	2.5	6.9	37%
10	948	7.7	1,405	384	228.1	1.7	6.2	27%
11	1,198	9.8	1,788	585	349.7	1.7	5.1	33%
12	1,102	9.0	1,642	585	340	1.7	4.8	36%
Total	12,235	100.0	18,249	5,624	3,640.10	1.5	5.0	31%

Hunting Over Bait

In 2003, use of bait was legalized in zones 11 and 12 to help reduce overabundant deer populations. In 2004, an assessment of deer use of automatic feeders during the archery season found that deer use of bait sites peaked 2 to 3 weeks after deer encountered bait sites and that deer use continued to increase from September through January when snow cover was present. The assessment also found that antlerless deer developed more predictable feeding patterns and used bait sites more often than antlered deer. Deer use of feeders may vary depending on snow cover or availability of mast crops in a given year. Hunter disturbance caused some deer to temporarily shift to night use, but then shifted back to day use within 3 days. Based on a survey of bowhunters, more than half of the hunters who were aware that baiting was legalized took advantage of bait during the hunting season. Bait use is expected to increase as more hunters become familiar with bait. Few hunters perceived bait as an unethical or unsporting method of hunting. Hunters who

used bait harvested 4 times more deer during the regular archery season (September - December) and nearly 8 times more deer during the January archery season than hunters using no bait. Hunters using bait on small properties (<1 acre) observed similar numbers of deer within shooting range as hunters using bait on larger properties (>12 acres).

Table 5. Zonal comparisons in private land shotgun/rifle harvest, hunter distributions, and success rates, 2004-2006.

Zone	Area (sq. miles)	Deer Harvest/Sq. Mile			Hunters/Sq. Mile			Hunter Success Rate		
		2004	2005	2006	2004	2005	2006	2004	2005	2006
1	293.1	2.4	2.2	1.6	6.0	5.7	5.9	40%	38%	28%
2	359.2	0.9	0.8	0.8	3.8	3.9	3.7	24%	21%	22%
3	329.7	1.1	1.0	0.8	3.0	2.9	2.7	36%	33%	31%
4	333.1	1.6	1.7	1.5	4.9	4.4	4.3	32%	39%	35%
4A	213.1	0.8	0.9	0.9	4.6 ^A	4.4 ^A	4.3 ^A	16%	20%	21%
4B	120.0	3.0	3.2	3.2	4.6 ^A	4.4 ^A	4.3 ^A	61%	70%	72%
5	454.2	2.8	2.7	2.2	6.4	6.6	6.9	43%	41%	33%
6	233.5	2.2	1.8	1.5	5.6	5.5	5.6	39%	32%	27%
7	318.1	1.3	0.9	0.9	3.4	3.3	3.0	39%	29%	29%
8	156.5	2.5	1.8	1.7	6.9	6.3	6.1	37%	29%	28%
9	244.9	3.1	2.6	2.5	7.6	7.1	6.9	41%	36%	37%
10	228.1	2.6	2.0	1.7	6.5	6.2	6.2	40%	32%	27%
11	349.7	2.3	1.8	1.7	5.0	5.0	5.1	46%	36%	33%
12	340.0	2.8	1.9	1.7	4.6	4.6	4.8	60%	42%	36%
Total	3,973.2	2.1	1.8	1.6	5.2	5.0	5.1	40%	34%	31%

^A Zone 4 was separated into zones 4A and 4B in 2003, but hunter survey data did not reflect this change.

Table 6. Zonal comparisons of archery season success rates, 2006.

Zones	2006 Answered	% of Hunters	2006 Estimated	2006 Harvest	2006 Success Rate
	Applications Archery		# of Archery Hunters		
1	663	7.2%	889	141	15.9
2	635	6.9%	851	76	8.9
3	425	4.6%	570	91	16.0
4 ^A	652	7.1%	874	199	22.8
5	1,060	11.5%	1,421	316	22.2
6	482	5.2%	646	112	17.3
7	740	8.0%	992	176	17.7
8	485	5.2%	650	92	14.1
9	592	6.4%	794	132	16.6
10	503	5.4%	674	117	17.3
11	2,152	23.3%	2,885	1,326	46.0
12	853	9.2%	1,144	379	33.1
Total	9,242	100.0%	12,392	3,157	25.5

^A Zone 4 was separated into zones 4A and 4B in 2003, but hunter survey data did not reflect this change.

Fall Acorn Crop

Acorns are a preferred food for white-tailed deer during fall and winter. Availability of acorns influences deer movement patterns and herd health. To interpret changes in harvest rates, herd health, and herd productivity, the deer program has been collecting data on abundance of the fall acorn crop from hunter surveys since 1993. Hunter perceptions of the fall acorn crop were ranked on a scale from 0 (scarce) to 6 (abundant acorns). In 2006, 52% of the hunters who responded to the survey ranked the fall acorn crop as abundant, 34% as moderate, and 14% as scarce. Zone 2 and 4A had the highest average rank (5.0) and zone 4B had the lowest average

rank (2.8, Figure 7). Average rank for the remaining zones ranged from 2.9 to 4.6. On a scale of 0-6, the average rank statewide was 4.1.

The past 13 years of data on acorn abundance and the deer harvest suggest that a correlation exists between hunter success and acorn abundance (Figure 8). In 1993, when acorns were most abundant, hunter success was lowest, and in 2004, when acorns were least abundant, the hunter success rate was highest. During years with low acorn productivity, deer travel more to access other food sources, such as green fields, increasing their vulnerability to hunters. On average, the acorn crop statewide has been moderate most years, scarce about every 7 years, and abundant every 3-4 years.

Figure 7. Perception of acorn crops (average rank) by Connecticut's deer hunters, 2003-2006.

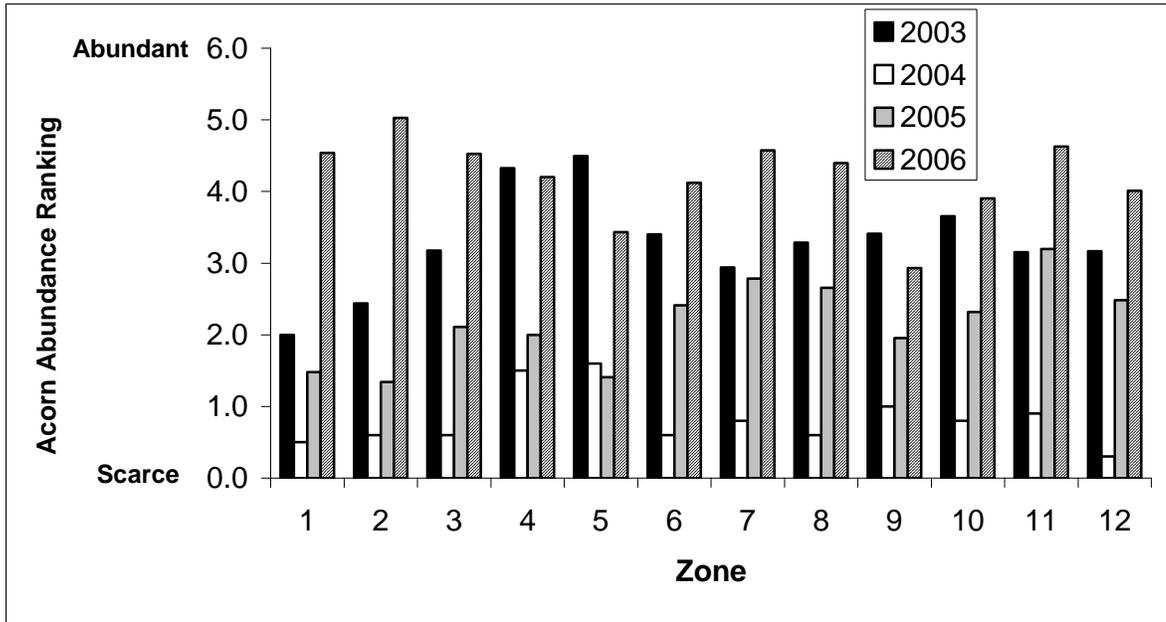
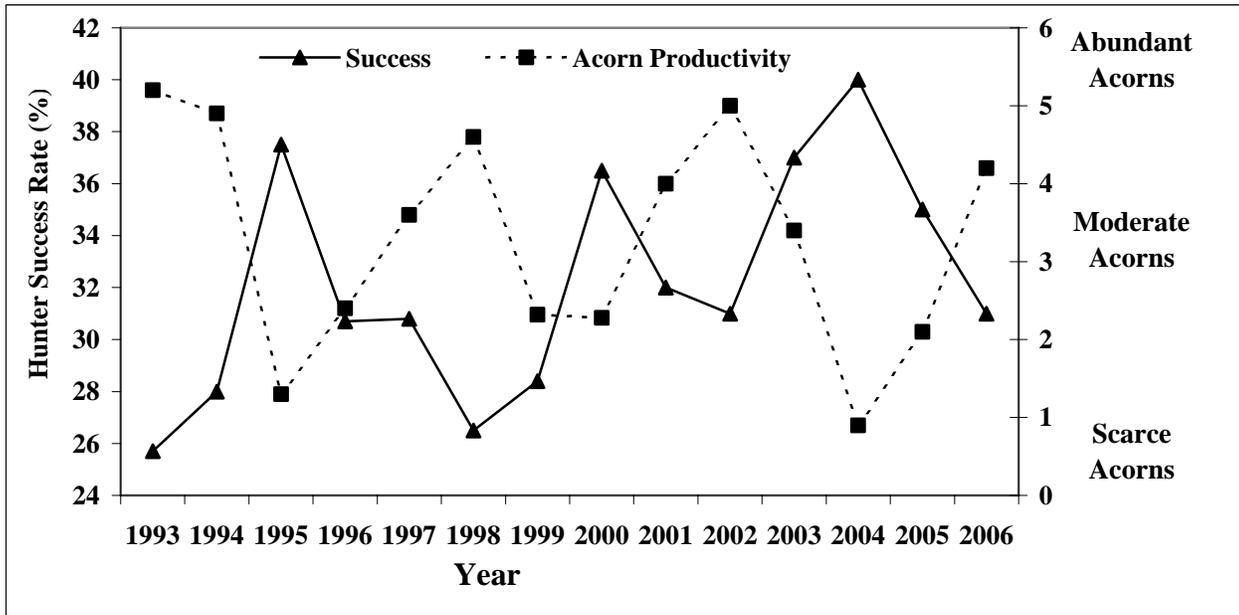


Figure 8. Relationship between private land hunter success rates and fall acorn productivity, 1993-2006.



Private Land Deer Harvest

The 2006 private land deer harvest was highest for deer management zones 5, 9, 11, and 12 (Table 7). Zonal harvest levels have fluctuated in most zones over the past 10 years (Table 7). These fluctuations likely reflect the difference in weather conditions, snow cover, acorn abundance, and deer densities. Although there is much variability, a consistently decreasing harvest trend is most noticeable in zone 1 and an increasing harvest trend is most noticeable in zone 11 over the past 10 years. Highest total deer harvest for the last 5 years has been observed in zone 11, and the harvest in zone 12 more than doubled since 2002, likely a result of the availability of replacement antlerless tags in zones 11 and 12 and from expanding the size of these zones (see note below Table 7). Total private land deer harvest decreased 8.1% from 2005 to 2006.

Table 7. Private land deer harvest for all seasons (excluding landowner) in each of Connecticut's deer management zones, 1997-2006.

Zone	Year									
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1	1,264	1,116	910	1,184	936	937	796 ^C	828	811	639
2	444	394	360	389	351	259	373 ^B	383	369	357
3	441	549	397	529	442	478	457	434	413	362
4 ^A	807	678	583	729	662	471				
4A							237 ^B	207	273	218
4B							397	445	476	467
5	1,763	1,382	1,612	2,061	1,651	1,293	1,250 ^C	1,510	1,607	1,348
6	908	627	808	909	854	746	550 ^C	596	544	511
7	482	518	529	624	524	489	564 ^B	618	473	454
8	437	389	486	523	433	378	463	514	467	398
9	1,249	894	1,208	1,593	1,408	1,197	873 ^C	882	817	757
10	607	468	597	746	713	519	521	664	567	504
11	1,088	1,020	1,237	1,400	1,562	1,839	2,084 ^B	2,128	1,799	1,898
12	593	627	679	720	646	636	1,272 ^B	1,330	1,080	976
Total	10,083	8,662	9,406	11,407	10,182	9,242	9,793	10,485	9,613	8,832
% Change	-3.0%	-14.1%	8.6%	21.3%	-10.7%	-9.2%	6.0%	7.1%	-8.3%	-8.1%

^A Zone 4 separated into Zones 4A and 4B in 2003.

^B In 2003 town/towns added to zone.

^C In 2003 town/towns lost from zone.

Herd Health

Measuring antler beam diameters (1 inch above the base) of yearling males is one method of assessing deer herd health. Mean antler beam diameters on yearling males are correlated with female productivity, which is related to habitat quality. For example, yearling males with large antler beam diameters (20.0+ mm) indicate excellent herd health, while small beam diameters (12-15.4 mm) imply poor herd health. Beam diameters 15.5-17.9 mm and 18.0-19.9 mm imply the herd is in fair to good condition. Mean yearling antler beam measurements in 2006 indicate that the deer herd in most zones was in fair to good condition. Mean beam measurements exceeded 18.0 in 1 of 12 zones (zone 11, Table 8). Mean antler beams typically range between 17-18mm in 10 of the past 12 years. Minor variations in beam measurements from year to year probably are due to fluctuations in food availability, winter conditions, or other variables. Most zones have fluctuated within the fair to good range since 1994.

Table 8. Average antler beam diameter (mm) of yearling males in each of Connecticut's deer management zones, 1994-2006.*

Zone	Year											
	1994	1995	1996	1997	1999	2000	2001	2002	2003	2004	2005	2006
1	16.4	18.3	16.4	16.6	17.9	17.2	17.7	18.9	17.4	16.8	17.0	16.4
2	17.4	18.4	17.7	18.0	18.1	18.1	16.7	18.1	18.6	16.9	19.2	17.0
3	19.0	17.7	17.6	18.7	19.3	18.7	15.7	18.3	18.2	16.1	19.8	16.4
4 ^A	19.5	17.3	15.9	17.0	18.4	18.7	16.0	17.9				
4A ^A							15.0	17.5	18.7	16.2	15.8	15.4
4B ^A							15.7	18.2	18.0	18.0	17.8	16.7
5	18.2	18.9	16.6	16.8	18.3	18.2	17.0	17.8	16.4	18.1	15.8	16.3
6	17.8	18.5	17.2	18.0	18.1	18.1	16.3	18.4	18.0	16.9	15.7	17.0
7	ND	18.5	17.2	17.5	17.1	18.3	16.1	17.9	17.4	17.8	17.5	16.1
8	15.0	18.7	15.7	17.5	18.0	17.4	16.8	17.3	18.6	17.6	20.5	17.5
9	17.6	17.7	16.6	17.1	19.1	17.9	16.5	18.4	17.3	16.7	17.7	17.5
10	16.4	17.8	17.2	18.1	17.6	17.1	16.0	17.9	15.9	17.5	15.5	14.5
11	17.5	17.5	18.1	16.5	16.3	16.8	18.7	17.2	17.9	17.4	15.3	20.3
12	ND*	ND*	ND*	ND*	17.4	17.1	15.7	18.2	17.1	17.1	17.8	16.2
Average	17.5	18.0	16.9	17.3	17.8	17.4	16.9	18.0	17.6	17.2	17.3	16.7

*No data collected in 1998 - no biological check stations.

^A Zone 4 separated into zones 4A and 4B in 2003.

ND= No data due to small sample sizes (N<5).

ND* =No data collected. Zone 12 was not delineated before 1997.

Deer Weights

Trends in deer weights are another indicator of overall herd health. Average dressed weights were similar from 2005 to 2006 for harvested young-of-year and yearling males (Table 9). Weights of young-of-year males harvested decreased by 9 pounds in zone 8 and increased by 15 pounds in zone 1. During the 2006 shotgun/rifle season, 5 bucks weighing 200 pounds or more were checked in at check stations when biological data were being collected (6 days; Table 10). The heaviest three bucks were harvested in Litchfield (211 lbs.), Pomfret, and Hampton (both 207 lbs.).

Table 9. Average dressed weights (lbs.) of male deer harvested during the shotgun/rifle hunting season, 2004-2006.

Zone	Young-of-Year			Yearling			Adult		
	2004	2005	2006	2004	2005	2006	2004	2005	2006
1	69.2	60.9	76.0	105.7	110.0	104.3	146.0	146.0	136.2
2	68.6	77.8	72.5	111.6	110.4	110.6	139.4	149.9	143.4
3	66.7	71.9	68.0	111.5	112.0	103.5	145.3	153.3	135.2
4A	64.2	57.2	57.0	103.8	104.6	99.0	148.9	140.8	134.7
4B	64.6	64.2	64.1	106.1	110.3	103.1	145.4	141.9	138.9
5	63.9	64.3	64.4	106.8	106.1	105.9	141.7	146.6	137.7
6	62.1	67.3	71.3	106.8	108.9	109.5	151.1	143.9	144.2
7	61.3	68.0	63.4	107.5	107.1	102.5	144.1	140.1	142.0
8	63.3	75.0	66.0	102.2	105.1	104.4	143.4	145.8	142.4
9	62.8	64.8	65.0	105.1	104.4	107.5	137.0	136.9	139.1
10	59.1	60.4	66.8	107.8	108.8	107.5	136.5	143.4	140.1
11	63.7	60.1	62.4	100.3	101.8	103.5	134.3	134.3	129.9
12	68.3	62.9	64.5	101.8	96.2	100.5	134.7	128.8	136.5
Average	64.4	65.8	66.3	105.9	106.6	104.7	142.1	142.4	138.5

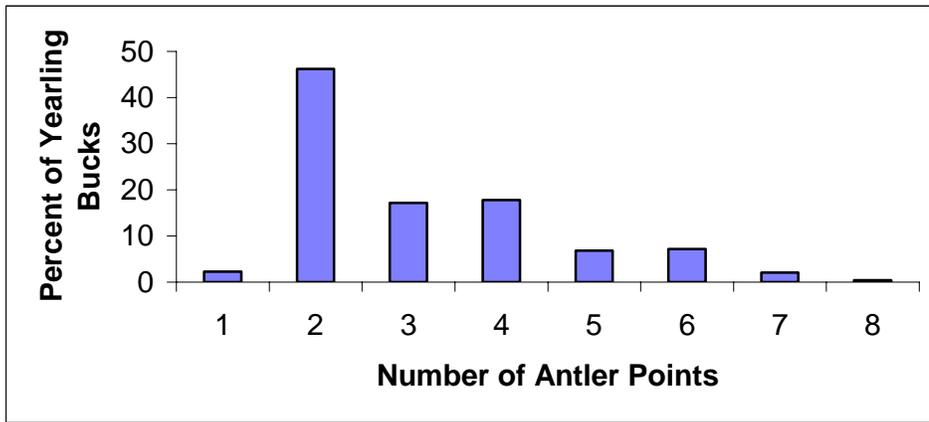
Table 10. Bucks over 200 pounds (dressed weight) registered at biological check stations (6 days) during the shotgun/rifle season, 2006.

Town	Weight (lbs)	Points
Litchfield	211	9
Pomfret	207	8
Hampton	207	8
Torrington	200	8
Vernon	200	9

Antler Points

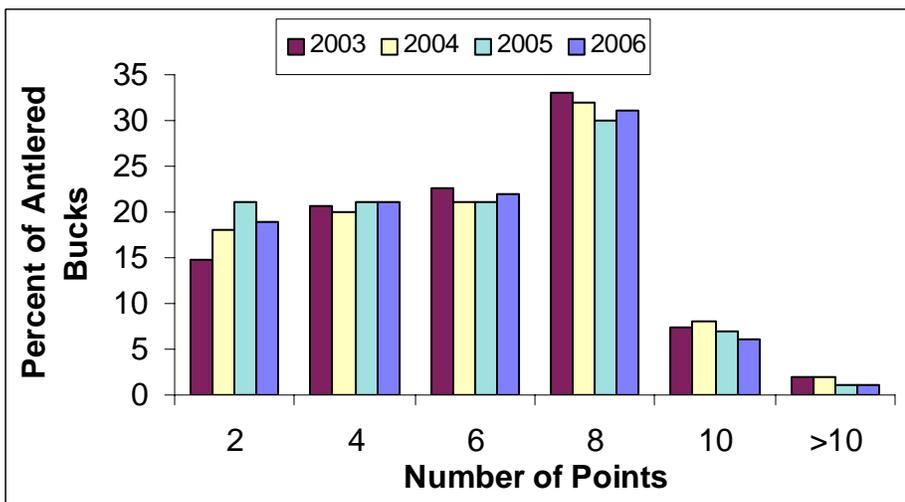
Deer age, nutritional status, and genetics affect the number of antler points on bucks. Number of antler points on yearling bucks aged at check stations ranged from 1 to 8 in 2006 (Figure 9). Most yearling bucks had 2 (46.2%) or 4 (17.8%) points and almost 10 percent had 6 or more points in 2006 (Figure 9, Appendix 2). Mean number of antler points on yearling males has fluctuated between 2 and 4 among most zones during the past 3 years (Appendix 3). Of all antlered bucks harvested, 8 pointers were the most frequent point category followed by 6, 4, and 2 points (Figure 10). Number of points on antlered bucks has remained consistent over the past 4 years (Figure 10).

Figure 9. Number of antler points on yearling males harvested during the shotgun/rifle deer season, 2006.



**Less than 1% of yearlings had more than 8 points.*

Figure 10. Percent of all antlered bucks harvested by point category during the shotgun/rifle deer season, 2003-2006.



Deer Harvest Sex Ratios

Removal of female deer is the most efficient means of stabilizing deer population growth. To facilitate stabilization, the Wildlife Division developed permits that encourage the harvest of female deer. All 2-tag permits come with 1 antlerless-only and 1 either-sex deer tag. Hunters could take 1 or 2 antlerless deer with all 2-tag permits except in zone 4A where the antlerless-only tag was NOT valid. Although button bucks are included in the antlerless harvest, this system promotes the removal of female deer (Table 11). The overall deer harvest sex ratios have been similar over the past 3 years (1.3 males per female) (Table 12). In 2006, 53% (6,153) of the total regulated deer harvest (excludes crop damage harvest) was comprised of antlerless deer. Although harvest was slightly higher for males than females, a significant proportion of the harvest included adult females, which contributes to population control efforts (Appendix 4).

Table 11. Sex ratios and antlered to antlerless ratios of deer harvested in 2006.

	Muzzleloader	Shotgun/Rifle	Archery	Landowner	Crop Damage	Total
Male:Female	0.90:1	1.61:1	0.86:1	1.45:1	0.68:1	1.27:1
Antlered:Antlerless	0.53:1	1.08:1	0.60:1	1.09:1	0.50:1	0.87:1

Table 12. Sex ratios (male:female) of deer harvested during Connecticut's regulated hunting seasons, 2003-2006.

2005		2006		Males per Female				3-year Average
Males	Females	Males	Females	2003	2004	2005	2006	(2003-2005)
7,109	5,544	6,836	5,375	1.4:1	1.3:1	1.3:1	1.3:1	1.3:1

Replacement Tags

The replacement tag system was developed to increase the harvest of female deer. This system is currently in place in zones 11 and 12. Since 1998, when archery hunters had access to replacement tags in zone 11, the buck harvest has remained relatively stable while the antlerless harvest in that zone increased nearly 5 times (from 200 to almost 1,000 deer annually) (Figure 11). The ratio of female deer harvested in zone 11 increased from 0.9 females per male (1994-1997) to 1.3 females per male (1998-2006) (Figure 12).

Check stations in zones 11 and 12 issued 1,338 replacement antlerless tags (796 shotgun/rifle, 500 archery, 42 muzzleloader) and 138 either sex tags (120 shotgun/rifle, 17 archery, 1 muzzleloader) during the 2006 shotgun/rifle, archery, and muzzleloader deer seasons (Table 13). Bowhunters used the greatest proportion (60%) of replacement tags, likely due to the longer season.

Figure 11. Comparisons of antlered and antlerless deer harvests during the archery deer season in zone 11, 1995-2006.

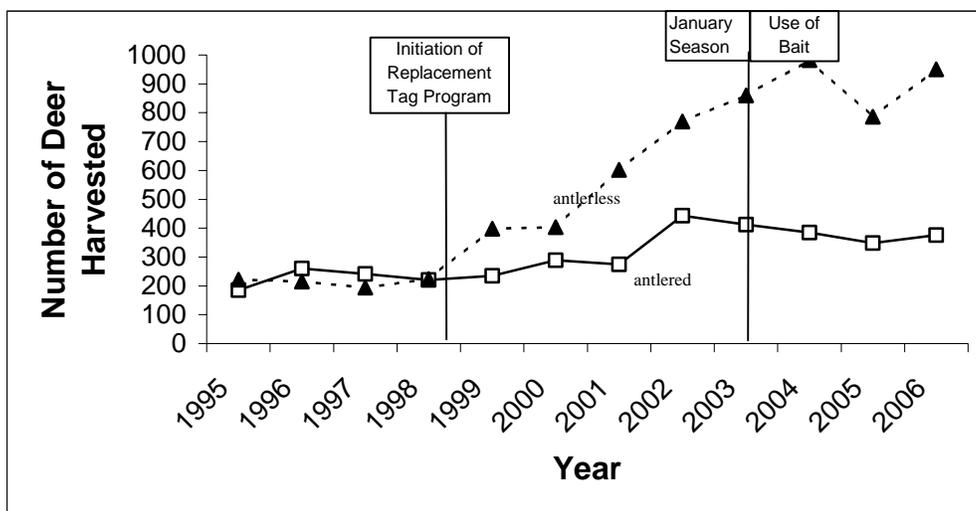


Figure 12. Sex ratios of harvested deer from zone 11 after implementation of the archery antlerless replacement tag program, 1994-2006.

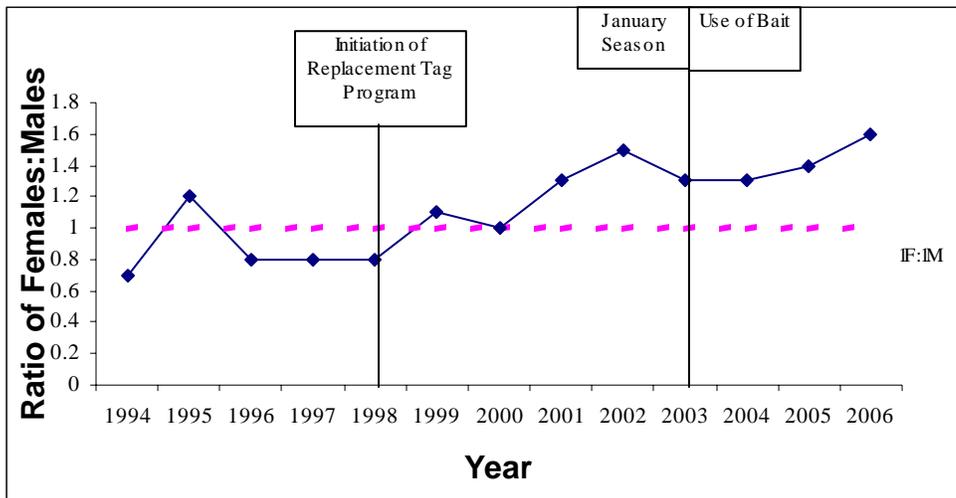


Table 13. Issuance and use of replacement antlerless and either-sex tags during the archery, firearms, and muzzleloader deer hunting seasons in 2006.

	Bow 9/15-1/31		Shotgun/Rifle 11/15-12/5		Muzzleloader 12/6-12/19		Total	
	Antlerless	Either-sex	Antlerless	Either-sex	Antlerless	Either-sex	Antlerless	Either-sex
2006 Issued	796	120	500	17	42	1	1338	138
2006 Used	477	56	103	3	10	0	498	59
Percentage Used	60.0%	46.7%	20.6%	17.6%	23.8%	0.0%	37.2%	42.8%

Deer Hunter Expenditures, Effort, and Venison Calculations

Deer hunting-related expenditures contribute significantly to Connecticut's economy. Deer permit sales generated \$1,128,887 in 2005 and \$1,239,449 in 2006 to the Connecticut General Fund. In addition, data collected from the annual deer hunter surveys indicated that Connecticut deer hunters spent an estimated \$8,887,712 on deer hunting-related goods and services in 2006.

In 2006, deer hunters spent a cumulative total of 422,375 days afield. Private and state land shotgun/rifle hunters used the greatest percentage of available hunting days during those seasons (33.3% and 42.2%). Although bowhunters used a smaller percentage of available hunting days, the archery season is much longer than the firearms season. Connecticut deer hunters collectively spent slightly more time (36.4 days per deer taken) and money (\$766 per deer taken) in 2006 than in 2005 (22.1 days at \$730 per deer taken). In 2006, hunters harvested an estimated 599,254 pounds (268 tons) of venison at an estimated value of \$2,990,277 (\$4.99/lb.).

2006 Subscription Rates for State Land Lottery Permits

In 2006, 7,883 hunters were selected to hunt during the shotgun and controlled hunt seasons through the state-administered deer lottery program. Lottery permits were allocated at a maximum rate of one shotgun permit per 20 acres. In many areas, permit issuance was less than the permit quota established for a given area. Fifty eight percent of all potential lottery permits were issued. Permit issuance reached 100% of both A and B seasons for 3 of 6 controlled hunt areas (Table 14). The following example explains how to interpret Table 14: In Deer Lottery Hunting Area (DLHA) 15, 100 percent of A season permits and 71 percent of B season permits were issued. Consequently, DLHA 15 was under subscribed compared to DLHA 52, which was filled to capacity (100%) for both A and B seasons and thus experienced greater hunter density. For applicants, the odds of receiving an "A" season permit are greater in areas with low hunter subscription rates. Hunters also should look at harvest levels in the different state land areas when selecting an area to hunt (Appendix 5 and 6).

Table 14. Percent of available A and B season hunting slots filled through the annual, state-administered shotgun deer lottery, 2004-2006.

Deer Lottery Area	% of Hunting Slots Filled					
	2004		2005		2006	
	A	B	A	B	A	B
1	77	0	16	0	68	0
2	90	0	47	0	76	0
3	47	NL	122	NL	57	NL
4	30	NL	14	NL	35	NL
5	100	NL	77	NL	82	NL
6	100	15	33	0	100	0
7	99	99	172	130	100	75
8	100	100	94	94	100	100
9	100	100	44	44	100	100
10	100	43	10	3	100	29
11	100	17	19	3	100	16
12	100	32	23	4	100	17
13	85	15	38	0	95	0
14	74	0	85	5	100	6
15	100	61	58	41	100	71
16	65	NL	28	NL	64	NL
17	37	NL	22	NL	27	NL
18	88	NL	15	NL	83	NL
19	25	NL	66	NL	27	NL
20	79	0	60	0	77	0
21	25	NL	18	NL	27	NL
22	72	0	92	0	85	0
23	31	NL	14	NL	40	NL
24	69	11	102	0	91	0
25	100	17	208	0	73	0
26	91	91	625	625	100	100
27	NA	NA	417	417	100	100
51 (Yale)	100	32	40	17	100	44
52 (Bristol)	50	64	100	100	100	100
53 (Maromas)	100	100	130	130	100	100
54 (Skiff Mt.)	100	68	263	68	100	26
56 (BHC-Hemlock)	100	100	100	100	100	100
57 (Colebrook)	43	0	72	0	28	0

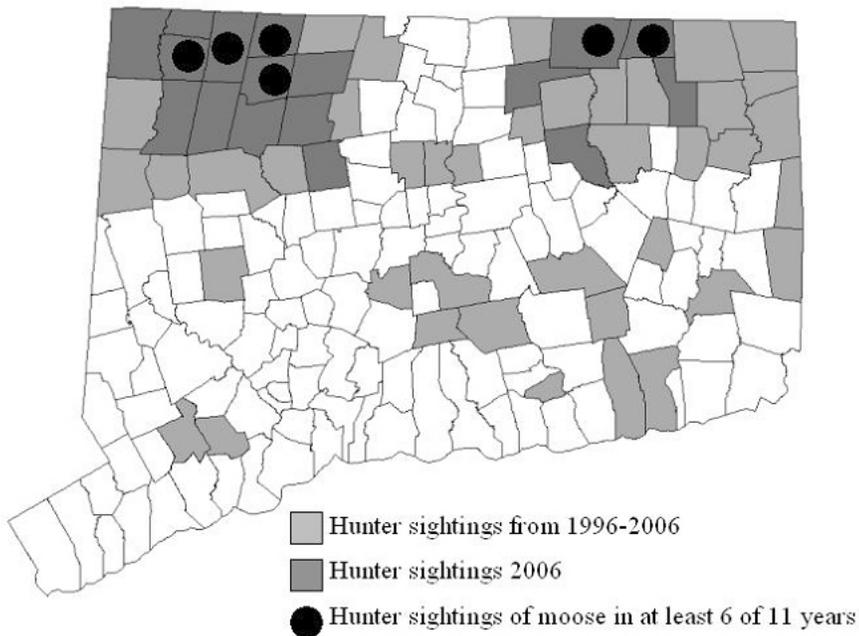
NL=No Lottery

NA=Not added until 2005

Moose Sightings

An increasing moose population in Massachusetts has led to an increased number of moose wandering or dispersing into Connecticut. In an effort to monitor trends in moose sightings in Connecticut, a question was added to the deer hunter survey card in 1996 regarding hunter observations of moose during the fall hunting season. Deer hunters reported 58 moose sightings in 18 towns in 2006 and 336 sightings over the past 11 years (Figure 13). Sightings have been reported from between 9 to 22 different towns each year. During this 11-year period, moose sightings have been reported in 57 different towns. Moose have been reported in Union and Hartland for 10 of 11 years. Moose sightings have been reported in 7 towns in at least 6 of 11 years. Most towns where hunters often report moose sightings occur along the Connecticut-Massachusetts border. In 2006, an average of 1 moose was observed by hunters for every 597 hunter-days spent in the field, a slight increase from 2005, when a moose was observed for every 855 hunter-days in the field. Currently, Connecticut has no open hunting season for moose.

Figure 13. Moose sightings reported on deer hunter surveys, 1996-2006.



Controlled Deer Hunts

Yale Forest (Area 51): Yale Forest is a 7,700-acre forest located in Eastford and Ashford. The forest is owned and managed by Yale University for research, education, and forest products. During the 2006 controlled hunt, 72 deer (43 males, 29 females) were harvested. Controlled hunts have been implemented on the property since 1984 in an effort to reduce deer impacts on forest regeneration. On average, 72 deer have been removed annually from the forest over the past 6 years.

Bristol Water Co. (BWC; Area 52): In 1994, BWC contacted the Wildlife Division and expressed interest in opening 4,500 acres for deer management. In 1995, the Wildlife Division conducted a winter aerial deer survey on BWC lands. After the completion and summary of survey results, BWC requested to participate in the controlled hunt program for the 1996, 1997, and 1998 deer seasons to reduce the local deer population. After 3 years of successfully implementing a deer management program on BWC land, BWC requested to continue participating in the program. During the 2006 hunting season, 36 deer were harvested (23 males, 13 females). Typically, annual deer harvest has fluctuated between 22 and 37 at this area.

Maromas Cooperative Management Area (Area 53): Since 1996, Maromas, a 1,400-acre parcel in Middletown owned by Northeast Utilities, has been open to shotgun and no-lottery muzzleloader hunting to maintain deer densities at levels compatible with available habitat. In 2006, hunters harvested 15 deer (13 males, 2 females), similar to the 7-year average of 17 deer (range 15 to 21).

Skiff Mt. (Area 54): Skiff Mountain is a 710-acre property in Sharon owned by Northeast Utilities. It is open to shotgun and no-lottery muzzleloader hunting. Four deer (3 males, 1 female) were taken in 2006. Harvests typically have fluctuated between 4 and 16 deer over the past 8 years.

Centennial Watershed State Forest (formally known as Bridgeport Hydraulic Co.) (Area 56): The Hemlock Tract has been open to hunting since 1996. In 2005, an additional 1,765 acres were opened to hunting (3,474 total acres). In 2006, 105 deer (57 males, 48 females) were harvested.

MDC Colebrook Reservoir/Hogback Dam (Area 57): This 4,159-acre parcel in Colebrook was opened to hunting in 1999 when 12 deer were harvested. In 2006, 10 deer (4 males, 6 females) were harvested. Harvest has typically fluctuated between 3 and 6 over the past 3 years.

Devil's Den: The Nature Conservancy owns this 1,660-acre property in Weston and Redding. In 2006, 30 deer were removed (15 males, 15 females). Harvests have fluctuated between 27 and 34 deer over the past 3 years.

Bluff Point: Controlled hunts and DEP deer removals at Bluff Point Coastal Reserve in Groton have been implemented over the past 11 years to reduce and maintain the deer population at about 25 animals. Since the program started in 1996, 482 deer have been

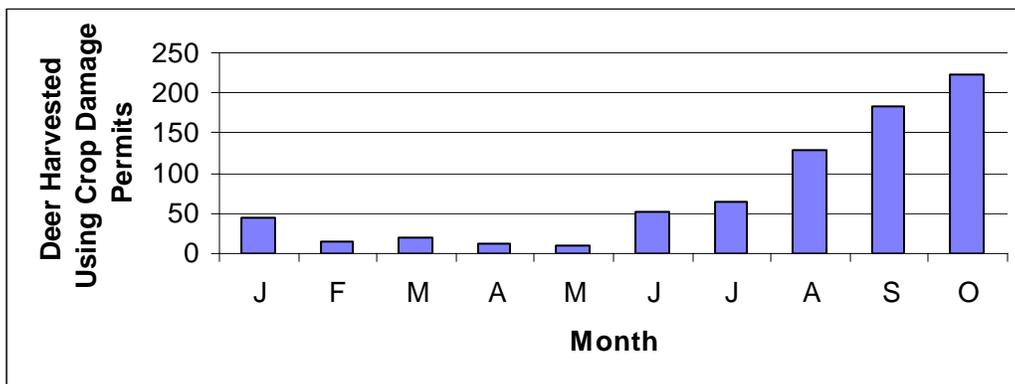
removed from Bluff Point, resulting in improved deer herd health and ecosystem stability. In December 2006, the deer population was estimated to be 36 deer. In February 2007, 11 deer were removed at night when the park was closed. After the February 2007 removal, the population was estimated to be about 25 deer.

Greenwich: Greenwich Audubon is a 285-acre sanctuary located in northern Greenwich. Audubon wants to reduce the deer population in order to restore the biological health of the sanctuary. In 2003, hunters from the Greenwich Sportsmen and Landowner's Association (GSLA) harvested 30 deer. Of the 30 deer harvested, 28 were females and 2 were males (one male was antlerless). In 2004, Audubon opened up an additional 135 acres to hunting. Hunters from the GSLA harvested 25 deer (24 females, 1 male). In 2006, hunters from GSLA harvested 22 deer (19 females, 3 males).

Crop Damage Permits

Deer damage is an important economic concern to some commercial agricultural operations. The Wildlife Division's crop damage program regulates the removal of deer on agricultural properties that meet specific criteria and are experiencing verifiable deer damage to specific plant commodities. The Division also encourages agriculturists to take advantage of the regulated deer hunting season to aid in the removal of problem deer and to use other methods, such as fencing, to reduce deer damage. During the 2006 calendar year, 755 deer were taken with crop damage permits (Appendix 7). From 1993-2004, annual deer harvest with crop damage permits had fluctuated between 543 and 946 deer. Harvest in zone 11 accounted for 14% of deer removed with crop damage permits in 2006. Crop damage harvest increased steadily from May to October with 54% of the annual harvest occurring in September and October (Figure 14). Crop damage permits are not valid in November and December.

Figure 14. Crop damage harvest by month, 2006.



Non-hunting Deer Mortality

Non-hunting deer mortality, particularly roadkills, represents a significant percentage of annual deer losses in Connecticut. Roadkill data provide important information relative to cultural carrying capacity, population modeling, and, to a lesser extent, deer density and herd sex ratios. In an urban-suburban state like Connecticut, measures of land-use conflicts, such as roadkills, are an important source of data for the formulation of management policies and recommendations.

In 2006, 2,907 non-hunting deer mortalities were reported (Appendix 8). Of those, 2,029 were killed in deer-vehicle collisions. This equates to an average of 5.6 deer being killed per day on Connecticut roads and highways. Roadkills accounted for 94% of all reported non-hunting mortality in 2006. Based on a 2-year study (2000-2001), for every 1 deer killed by a vehicle and reported to the Wildlife Division, 5 additional deer are killed by a vehicle and not reported. Based on this correction factor, it is estimated that the actual number of roadkills in 2006 was 12,174. Twenty percent (433) of all reported roadkilled deer in Connecticut occurred in deer management zone 11 (Fairfield County, Figure 2) in 2006 (Appendix 9). Deer roadkills in zone 11 have been 2 to 6 times greater than in all other deer management zones (Appendix 9). Non-hunting mortality comprised 19.3% of the total reported deer mortality in Connecticut, including crop damage harvest (Appendix 8).

Chronic Wasting Disease

Over the past 4 years, the Wildlife Division has focused much effort on conducting surveillance for chronic wasting disease (CWD) in deer. CWD is one of a group of diseases called transmissible spongiform encephalopathies (TSE) or prion diseases that are inevitably fatal to members of the deer family. CWD is closely related to, but different than, other TSE's in other species, such as scrapie in sheep.

CWD was first recognized as a disease in 1967 in captive mule deer at a wildlife research facility in Fort Collins, Colorado. The disease was first diagnosed in free-ranging elk, mule deer, and white-tailed deer in Colorado and Wyoming in 1981, 1985, and 1990, respectively. To date, CWD has been diagnosed in captive cervid facilities in Alberta, Colorado, Kansas, Montana, Minnesota, Nebraska, New York, Oklahoma, Saskatchewan, and South Dakota, and in free-ranging cervids in Colorado, Illinois, Nebraska, New Mexico, New York, South Dakota, Saskatchewan, Utah, West Virginia, Wisconsin, and Wyoming.

In 2002, concerns about CWD entering Connecticut prompted emergency regulations to be enacted restricting the movement of live animals into the state. In 2003, the DEP began its first intensive CWD surveillance program. A total of 233 deer were collected statewide and all tested negative for CWD. In 2004, 317 samples were collected from zone 11 and all tested negative for CWD. In 2005, 643 samples were collected and tested from deer harvested during the archery, shotgun/rifle, and crop damage seasons and from deer found on roadways. An additional 8 samples were collected from animals displaying symptoms similar to CWD and submitted for testing. In 2006, 667 samples were tested, 310 from high-risk areas (zones 1, 6, and 11) along the Connecticut/New York border and 357 from the remainder of the state. All samples were tested at the University of Connecticut's Department of Pathobiology and Veterinary Science and all tested negative for CWD. The DEP will continue to monitor for CWD as long as funding is available.

Conclusion

Over the past 28 years, deer population size, human land-use practices, and public attitudes toward wildlife have changed considerably. Today, hunters may legally take up to 14 deer per year if they participate in all hunting seasons and additional deer may be taken in 2 of the 12 deer management zones. Historically, permit issuance has increased consistently from 11,710 in 1975 to 61,333 in 1992. Since 1992, permit issuance has remained relatively stable, fluctuating between 60,316 and 64,032. Archery permit issuance declined in 2003 when all hunters were required to complete the archery hunting safety course and the cost of an archery permit increased. However, archery permit issuance has increased close to what it was prior to 2003. Over the last 10 years, harvest in most deer management zones has remained relatively stable. However, with increased opportunities and incentives to harvest deer in urban deer management zones 11 and 12, the harvest has more than doubled in these areas. Increased harvest efforts appear to have stabilized deer populations in many areas of the state.

Although hunting is the most effective and cost-efficient means of deer population control, opinions regarding use of different options for managing urban deer herds vary greatly. To better understand deer movement patterns and public opinions regarding deer populations in urban and suburban areas, the Wildlife Division initiated several long-term urban deer studies in residential communities in recent years. Reports summarizing findings from these studies are available to communities interested in managing deer in more developed areas of the state, such as Fairfield County. To obtain copies of these reports, contact the Wildlife Division's Deer Program at 860-642-7239. The Wildlife Division will continue to provide technical assistance on deer control options to interested communities. Future management efforts will continue to focus on deer population stabilization. In areas with overabundant deer populations, landowners will be encouraged to use hunting, where possible, as a management tool. A booklet on *Managing Urban Deer in Connecticut* is available from the Wildlife Division to assist communities in developing effective deer management programs.

Appendix 1. Total Deer harvest and reported roadkilled deer by town, 2006.

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Andover	15	40	11	8	0	15	0	89
Ansonia	2	3	0	0	0	0	0	5
Ashford	38	130	32	10	10	22	3	245
Avon	6	15	0	1	1	10	3	36
Barkhamsted	5	33	8	3	0	5	0	54
Beacon Falls	3	26	0	1	2	1	0	33
Berlin	9	26	3	1	7	5	0	51
Bethany	16	26	0	3	0	3	0	48
Bethel	38	50	1	3	6	26	3	127
Bethlehem	8	17	3	3	3	7	0	41
Bloomfield	10	11	0	2	0	9	4	36
Bolton	11	26	2	4	10	14	1	68
Bozrah	8	55	16	5	3	5	2	94
Branford	6	5	1	2	4	0	0	18
Bridgeport	0	1	0	0	0	0	0	1
Bridgewater	9	26	8	3	0	6	0	52
Bristol	7	5	1	1	0	8	1	23
Brookfield	15	34	3	4	0	16	1	73
Brooklyn	18	45	20	5	5	21	0	114
Burlington	11	35	1	4	0	21	0	72
Canaan	9	40	4	3	9	0	0	65
Canterbury	9	74	22	5	2	22	0	134
Canton	5	18	2	0	1	5	0	31
Chaplin	8	61	5	7	1	11	1	94
Cheshire	8	30	1	2	14	19	1	75
Chester	7	27	3	4	0	2	0	43
Clinton	6	7	0	1	1	1	0	16
Colchester	33	140	25	9	4	46	1	258
Colebrook	3	13	4	2	0	0	0	22
Columbia	13	70	13	3	7	6	1	113
Cornwall	21	59	4	9	1	5	1	100
Coventry	31	118	11	9	0	32	1	202
Cromwell	1	5	0	0	5	5	0	16
Danbury	51	38	2	5	0	19	1	116
Darien	51	1	0	0	0	19	8	79
Deep River	3	11	4	2	8	0	0	28
Derby	3	1	0	0	0	0	0	4
Durham	15	46	2	9	0	6	1	79
East Granby	3	9	2	1	0	12	0	27
East Haddam	43	163	31	13	10	19	1	280
East Hampton	13	81	6	10	4	9	0	123
East Hartford	3	3	0	0	1	6	0	13
East Haven	2	7	0	0	0	0	0	9
East Lyme	26	60	5	9	0	22	0	122
East Windsor	13	28	3	1	0	4	0	49

Eastford	17	75	9	3	4	4	0	112
Easton	78	91	1	5	6	21	7	209
Ellington	7	21	2	1	0	9	0	40
Enfield	7	27	2	1	4	15	4	60
Essex	3	11	0	2	0	6	0	22
Fairfield	108	13	0	0	0	26	9	156
Farmington	3	8	0	1	17	16	1	46
Franklin	13	72	12	8	3	5	1	114
Glastonbury	10	80	9	1	23	47	4	174
Goshen	7	42	3	3	7	2	0	64
Granby	4	24	6	6	0	0	0	40
Greenwich	85	3	0	1	0	16	2	107
Griswold	7	64	16	4	32	9	0	132
Groton	13	12	6	0	5	9	0	45
Guilford	33	47	4	5	0	19	0	108
Haddam	20	106	13	10	2	7	0	158
Hamden	10	10	2	5	12	4	0	43
Hampton	8	65	9	11	3	5	0	101
Hartford	0	1	0	0	0	3	1	5
Hartland	3	33	2	3	1	2	0	44
Harwinton	17	48	2	1	3	11	0	82
Hebron	19	89	12	9	13	27	0	169
Kent	14	83	8	11	1	10	0	127
Killingly	17	64	16	6	7	40	1	151
Killingworth	10	59	3	9	0	2	1	84
Lebanon	24	176	21	7	14	45	1	288
Ledyard	10	49	8	10	3	25	2	107
Lisbon	2	28	11	7	0	10	0	58
Litchfield	24	58	6	5	13	21	1	128
Lyme	24	105	7	14	12	3	1	166
Madison	18	7	1	0	0	10	0	36
Manchester	13	10	2	0	0	31	1	57
Mansfield	29	103	17	11	15	51	1	227
Marlborough	11	57	1	4	0	23	1	97
Meriden	1	10	1	1	0	22	0	35
Middlebury	12	12	2	2	0	10	0	38
Middlefield	7	26	2	0	24	0	0	59
Middletown	27	73	7	9	11	12	0	139
Milford	7	3	0	0	1	8	0	19
Monroe	26	31	1	5	1	0	0	64
Montville	11	54	13	3	4	38	0	123
Morris	9	30	3	2	7	2	1	54
Naugatuck	9	17	2	2	1	5	1	37
New Britain	0	0	0	0	0	4	1	5
New Canaan	122	0	1	0	0	43	7	173
New Fairfield	13	22	3	8	0	11	1	58
New Hartford	11	38	12	2	3	4	0	70

New Haven	0	1	0	0	0	3	0	4
New London	3	1	1	0	0	1	0	6
New Milford	30	101	11	12	14	5	0	173
Newington	0	0	0	0	0	0	0	0
Newtown	127	144	6	20	12	13	0	322
Norfolk	2	44	2	7	0	1	0	56
North Branford	3	7	2	1	2	5	0	20
North Canaan	2	37	0	1	3	1	0	44
North Haven	3	2	0	0	0	8	0	13
North Stonington	19	69	16	5	4	10	0	123
Norwalk	28	6	0	0	0	3	0	37
Norwich	17	42	1	7	0	15	1	83
Old Lyme	40	55	0	6	0	19	2	122
Old Saybrook	4	5	0	3	0	4	0	16
Orange	24	6	0	1	0	23	1	55
Oxford	9	54	8	5	13	8	0	97
Plainfield	20	77	20	7	7	6	0	137
Plainville	0	4	0	2	0	0	0	6
Plymouth	4	37	7	3	0	7	2	60
Pomfret	44	133	22	15	18	12	3	247
Portland	3	50	1	6	11	17	1	89
Preston	6	44	19	7	16	14	0	106
Prospect	4	18	2	2	0	17	0	43
Putnam	8	45	9	4	0	22	0	88
Redding	140	104	6	11	16	36	2	315
Ridgefield	184	38	1	6	0	73	7	309
Rocky Hill	1	3	0	0	1	3	0	8
Roxbury	10	48	5	6	4	9	0	82
Salem	13	62	11	7	0	6	0	99
Salisbury	41	109	13	11	28	12	0	214
Scotland	28	73	14	8	3	11	1	138
Seymour	21	13	3	1	0	1	0	39
Sharon	21	137	7	18	3	13	0	199
Shelton	20	18	2	0	53	2	2	97
Sherman	11	42	3	6	4	10	0	76
Simsbury	4	7	0	0	0	2	0	13
Somers	7	18	3	3	1	12	0	44
South Windsor	5	29	2	0	1	9	3	49
Southbury	19	30	3	2	26	28	2	110
Southington	15	22	2	0	6	11	0	56
Sprague	6	24	12	5	0	2	0	49
Stafford	23	77	34	7	2	15	1	159
Stamford	31	4	0	0	0	2	0	37
Sterling	12	62	19	6	11	2	0	112
Stonington	37	55	11	5	7	22	0	137
Stratford	3	2	0	0	0	6	0	11
Suffield	4	39	3	3	0	1	0	50
Thomaston	7	10	1	1	5	5	0	29

Thompson	40	117	26	13	10	25	0	231
Tolland	26	37	23	4	10	26	3	129
Torrington	3	18	1	1	3	4	0	30
Trumbull	10	0	0	0	0	23	2	35
Union	17	70	10	6	1	2	0	106
Vernon	10	17	0	5	0	10	2	44
Voluntown	37	94	14	12	8	3	0	168
Wallingford	14	12	2	3	20	23	0	74
Warren	9	35	7	2	6	2	0	61
Washington	9	54	8	11	21	4	0	107
Waterbury	3	2	0	0	1	5	0	11
Waterford	88	86	3	10	4	30	0	221
Watertown	11	21	4	1	0	4	0	41
West Hartford	1	0	0	0	0	7	0	8
West Haven	1	0	0	1	0	1	0	3
Westbrook	4	11	1	0	0	0	1	17
Weston	64	43	1	1	0	0	0	109
Westport	8	0	0	0	0	13	1	22
Wethersfield	0	4	0	0	2	1	0	7
Willington	10	42	11	4	0	19	1	87
Wilton	113	51	2	4	6	55	8	239
Winchester	5	23	5	1	0	3	0	37
Windham	13	46	6	7	0	19	0	91
Windsor	4	7	2	1	5	4	1	24
Windsor Locks	0	0	0	0	0	1	0	1
Wolcott	5	8	0	3	0	12	0	28
Woodbridge	8	10	0	0	0	23	5	46
Woodbury	7	43	3	12	2	28	0	95
Woodstock	36	150	31	10	14	18	0	259
Totals	3,157	6,785	959	697	755	2,029	137	14,519

Appendix 2. Percent of yearling bucks harvested by antler point category, 1986-2006.

Year	Sample Size	Number of Antler Points on Yearling Bucks									
		1	2	3	4	5	6	7	8	9	10
1986	373	0.8	39.7	13.7	24.4	8.8	8.3	1.6	2.1	0.3	0.3
1987	463	0.2	45.4	14.9	19.7	7.6	8.4	1.5	2.2	0.2	0.0
1988	735	2.3	54.6	11.6	15.5	7.6	5.6	0.7	1.6	0.3	0.3
1989	607	0.8	55.4	14.2	14.8	6.3	4.9	1.3	2.0	0.3	0.0
1990	485	0.4	49.3	14.8	20.4	6.2	5.8	1.0	1.0	0.6	0.4
1991	579	0.0	46.8	14.3	22.1	6.4	7.6	1.0	1.6	0.2	0.0
1992	342	0.3	38.3	13.7	23.4	9.1	10.2	2.6	2.0	0.3	0.0
1993	370	0.3	62.7	14.3	11.9	3.5	4.3	1.6	1.1	0.3	0.0
1994	328	0.6	43.9	14.3	19.8	8.8	9.1	1.5	1.5	0.3	0.0
1995	428	0.7	28.5	13.6	26.2	13.3	11.4	3.5	2.3	0.2	0.2
1996	524	0.8	47.9	13.4	19.5	8.2	7.4	1.5	1.1	0.2	0.0
1997	506	0.4	47.6	11.9	20.4	8.9	7.1	2.6	1.2	0.0	0.0
1998*											
1999	564	0.4	31.2	13.8	28.2	10.5	10.1	2.8	3.0	0.0	0.0
2000	739	0.1	34.4	12.6	24.6	11.9	11.5	3.7	1.2	0.0	0.0
2001	573	0.9	55.0	11.3	18.7	6.5	5.9	0.9	0.9	0.0	0.0
2002	535	3.7	33.1	15.1	26.0	8.0	10.7	2.8	0.6	0.0	0.0
2003	499	0.2	32.0	17.0	25.0	11.6	9.2	3.0	1.4	0.2	0.0
2004	671	1.0	41.0	15.0	22.0	7.0	9.0	2.0	2.0	0.0	0.0
2005	603	3.4	43.1	15.3	20.7	7.6	7.3	1.1	1.9	0.2	0.2
2006	528	2.3	46.2	17.2	17.8	6.8	7.2	2.1	0.4	0.0	0.0
Average	523	1.0	43.8	14.1	21.1	8.2	8.0	1.9	1.6	0.2	0.1

* No data collected in 1998.

Appendix 3. Mean number of antler points of yearling males by zone, 1999-2006.

	1	2	3	4	4A	4B	5	6	7	8	9	10	11	12
1999	3.7	3.5	3.8	3.9			3.8	4	3.3	4.3	3.9	4	3	3.8
2000	3.7	3.7	3.6	3.5			4.1	4.2	3.6	2.9	3.6	3.1	3.2	3.2
2001	3.2	3.1	2.6	2.6			3	2.9	3.2	3.6	3	2.9	3.5	2.8
2002	4.0	4.5	3.0	4.0			5.0	3.5	3.8	3.0	3.5	4.0	4.0	4.0
2003	3.1	3.8	3.6		3.8	3.5	3.4	4	3.8	3.8	3.6	3.6	3.2	3.5
2004	3.2	3.1	3.6		3.6	3.3	3.6	3.2	3.1	3.5	3.4	3.7	3.3	3.0
2005	3.2	3.4	3.7		3.2	3.5	3.3	3.2	3.4	3.5	3.3	3.6	2.3	2.9
2006	2.8	2.7	3.1		2.7	2.9	3.0	3.1	3.4	3.9	3.4	3.5	3.3	3.2

Appendix 4. Sex ratios (male:female) of deer harvested during Connecticut's regulated hunting seasons, 2004-2006.

Season	2004		2005		2006		3-year Average (2002-2004)		Males per Female		
	Males	Females	Males	Females	Males	Females	Males	Females	2004	2005	2006
Archery											
State Land	237	190	210	198	257	242	237	199	1.2:1	1.1:1	1.1:1
Private Land	1,333	1,574	1,215	1,383	1,186	1,321	1,339	1,318	0.84:1	0.88:1	0.90:1
Subtotal	1,570	1,764	1,425	1,581	1,443	1,563	1,576	1,517	0.89:1	0.90:1	0.92:1
Muzzleloader											
State Land	110	127	77	109	69	78	117	114	0.87:1	0.71:1	0.88:1
Private Land	382	491	240	355	298	252	338	380	0.79:1	0.68:1	1.2:1
Subtotal	492	618	317	464	367	330	455	494	0.80:1	0.68:1	1.1:1
Shotgun/Rifle											
State Land A	625	302	580	267	653	320	552	377	2.1:1	2.2:1	2.0:1
State Land B	94	74	197	139	111	72	82	100	1.3:1	1.4:1	1.5:1
Private Land	4,067	2,634	3,830	2,579	3,417	2,206	3,744	3,060	1.5:1	1.5:1	1.6:1
Subtotal	4,786	3,010	4,607	2,985	4,181	2,598	4,234	3,458	1.6:1	1.5:1	1.6:1
Landowner	719	551	695	556	567	392	716	527	1.3:1	1.3:1	1.5:1
Total	7,567	5,943	7,044	5,586	6,558	4,883	6,981	5,996	1.3:1	1.3:1	1.3:1

Appendix 5. Deer harvest on state Deer Lottery Hunting Areas (DLHA), 2006.

DLHA	Shotgun	Muzzleloader	Archery	Total
1	66	5	17	88
2	26	2	5	33
3	5	1	0	6
4	40	7	8	55
5	14	2	2	18
6	37	2	12	51
7	6	6	2	14
8	20	7	6	33
9	33	4	17	54
10	111	22	25	158
11	83	7	15	105
12	69	6	6	81
13	40	6	9	55
14	9	1	4	14
15	25	5	25	55
16	44	7	11	62
17	30	5	17	52
18	95	13	43	151
19	4	2	10	16
20	24	3	12	39
21	57	0	0	57
22	12	2	9	23
23	51	13	52	116
24	12	0	5	17
25	2	1	0	3
26	3	2	2	7
27	5	1	3	9
51	72	0	0	72
52	36	0	0	36
53	15	7	11	33
54	4	1	0	5
55	3	0	0	3
56	105	0	37	142
57	6	1	3	10
Total	1,164	141	368	1,673

Appendix 6. Archery harvest on state areas, 2006.

Shaded areas = areas open to bow hunting only

Name of Area	Total	Females	Males
Algonquin State Forest	1	0	1
American Legion State Forest	3	1	2
Assekongk Swamp WMA	1	0	1
Babcock Pond WMA	2	2	0
Barn Island WMA	6	2	4
Bear Hill WMA	3	2	1
Beaver Brook State Park	2	1	1
Bennets Pond SP	9	5	4
Bigelow Hollow State Park	3	1	2
Bishops Swamp WMA	2	1	1
Black Rock Lake	2	0	2
Bloomfield Flood Control Area	3	1	2
Camp Columbia State Forest	3	1	2
Cedar Swamp WMA	2	2	0
Centennial Watershed SF	37	19	18
Cockaponset State Forest	25	11	14
East Swamp	1	0	1
Eight Mile River WMA	2	2	0
Franklin Swamp WMA	4	1	3
Great Swamp Flood Control Area	9	4	5
Hancock Brook Lake	2	0	2
Harkness/Verkades	15	9	6
Higganum Meadows WMA	2	0	2
Higganum Reservoir	2	1	1
Housatonic State Forest	15	5	10
Jim Spignesi WMA	2	2	0
Kollar WMA	5	0	5
Larson Lot WMA	2	1	1
Lebanon Coop	1	1	0
Mansfield Hollow Lake	5	2	3
Mansfield State Leased	1	1	0
Mattatuck State Forest	9	4	5
MDC Colebrook/Hogback	3	2	1
Meshomasic State Forest	15	5	10
Mohegan State Forest	2	0	2
Mono Pond	1	1	0
Nassahegon State Forest	2	1	1
Natchaug State Forest	43	25	18
Nathan Hale State Forest	17	10	7
Naugatuck State Forest	17	10	7
Nehantic State Forest	9	5	4
Newgate WMA	4	2	2
Nipmuck State Forest	17	7	10
Nott Island	1	0	1
NU-Maromas Coop WMA	11	5	6
Nye Holman State Forest	3	1	2
Pachaug State Forest	52	28	24

Paugussett State Forest	6	1	5
Peoples State Forest	1	1	0
Pomeroy State Park	8	4	4
Pootatuck State Forest	2	1	1
Quaddick State Forest	7	3	4
Quinebaug River WMA	1	0	1
Quinnipiac River State Park	2	0	2
Robbins Swamp WMA	2	2	0
Roraback WMA	11	4	7
Rose Hill WMA	2	1	1
Ross Marsh WMA	3	2	1
Ross Pond State Park	2	0	2
Salmon River Cove & Haddam Neck	14	8	6
Salmon River State Forest	2	1	1
Scantic River State Park	1	0	1
Selden Island State Park	4	2	2
Sessions Woods WMA	1	0	1
Shenipsit State Forest	11	5	6
Talbot WMA	7	4	3
Thomaston Dam	1	1	0
Topsmead State Forest	1	0	1
Trout Brook Valley	2	0	2
Tunxis State Forest	3	2	1
Twin Lake	2	2	0
West Thompson Dam	3	1	2
Wooster Mountain State Park	12	8	4
Wopowog WMA	2	2	0
Wyantnock State Forest	5	2	3
Zemko Pond WMA	3	1	2
Total	499	242	257

Appendix 7. Deer harvested using crop damage permits in Connecticut's deer management zones, 1995-2006.

Zone	Year											
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1	117	213	133	126	160	159	121	103	106	98	82	64
2	20	4	13	9	20	16	7	10	16	24	18	18
3	50	42	32	76	52	60	59	44	61	109	105	71
4	40	72	45	52	34	43	41	40				
4A									17	9	25	14
4B									35	46	38	32
5	65	128	55	26	48	87	75	46	71	124	129	95
6	59	86	83	39	146	112	71	73	77	56	82	77
7	45	45	34	54	78	44	49	60	78	90	62	69
8	50	39	65	26	42	60	39	47	42	53	37	47
9	34	66	70	33	64	59	38	27	42	43	53	48
10	44	41	60	31	31	54	48	51	45	36	50	66
11	40	65	92	71	113	122	110	104	164	159	114	109
12	ND	ND	66*	49	50	52	31	28	72	99	47	45
Total	564	801	748	592	838	868	689	633	826	946	842	755

ND=No data collected. Zone 12 was not delineated between 1994 and 1996.

* Calculated after establishment of zone 12; includes deer from zones 7, 8, 9, 10.

Appendix 8. Non-hunting deer mortality reported in Connecticut, 1996-2006.

Cause of Death	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Road	2,875	2,612	2,263	2,674	3,101	3,038	2,434	2,778	2,620	2,667	2,029
Dog	4	2	2	6	9	12	6	11	2	3	3
Unknown	140	173	200	179	175	190	140	217	183	183	117
Illegal	1	1	5	10	14	21	13	5	6	2	3
Crop damage	801	748	592	838	868	689	633	831	946	842	755
Total	3,821	3,536	3,062	3,707	4,167	3,950	3,226	3,842	3,757	3,697	2,907
Non-hunting:											
Harvest	1:3.2	1:3.4	1:3.3	1:3.0	1:3.2	1:3.0	1:3.7	1:3.0	1:3.6	1:3.4	1:3.4
% Mortality*	24.6	23.6	23.7	25.7	24.4	25.7	19.6	23.3	21.7	22.6	19.3
% of Harvest	31.7	29.7	30.2	33.6	31.3	33.1	26.9	30.3	27.7	29.2	29.2

* Crop damage harvest is included under non-hunting mortality.

Appendix 9. Frequency of deer road kills in each of Connecticut's deer management zones, a five-year comparison, 2002-2006.

Zone	2002	2003	2004	2005	2006	Five-year		Habitat (sq. miles)	Roadkills/Sq. Mile	
						Total	Zonal %		2005	2006
1	109	136	91	119	64	519	4.1	293.1	0.41	0.22
2	59	62	75	97	58	351	2.8	359.2	0.27	0.16
3	239	297	238	230	207	1,211	9.7	329.7	0.70	0.63
4	205					205	1.6			
4A		78	110	135	83	406	3.2	213.1	0.63	0.39
4B		150	137	196	128	611	4.9	120	1.63	1.07
5	230	269	270	330	240	1,339	10.7	454.2	0.73	0.53
6	189	120	127	106	93	635	5.1	233.5	0.45	0.40
7	204	295	285	261	202	1,247	10.0	318.1	0.82	0.64
8	73	53	53	54	35	268	2.1	156.5	0.35	0.22
9	235	247	265	282	199	1,228	9.8	244.9	1.15	0.81
10	129	149	122	117	93	610	4.9	228.1	0.51	0.41
11	507	592	519	448	433	2,499	20.0	349.7	1.28	1.24
12	255	330	328	292	191	1,396	11.1	340	0.86	0.56
Total	2,434	2,778	2,620	2,667	2,026	12,525	100.0	3,640.1	0.73	0.56