

2008 Connecticut Deer Program Summary



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Introduction

This booklet is the 28th 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 2008, 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), extending the archery season to include the month of January (2003), implementation of sharp-shooting programs (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 (zones) 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 zones 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, 18 of 23 Fairfield County towns have joined the Alliance. 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 Town of Redding developed a website (<http://besaferredding.org/>) to facilitate a process whereby willing landowners can be contacted by hunters that are committed to removing deer from private land at no cost to the landowner. The mission is to get Redding residents to work together for the purpose of reducing tick-related diseases and deer-vehicle accidents that result from deer overabundance, and reducing deer impacts to the forest understory to facilitate the return of native bird and wildlife species.

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 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 unless de-boned. An updated list of states and Canadian provinces where CWD has been documented can be found in the annual Connecticut Hunting and Trapping Guide and on the DEP website.

Licenses and permits to fish, hunt, and trap in Connecticut can now be purchased online by going to Connecticut's new **Online Sportsmen Licensing System** (www.ct.gov/dep/sportsmenlicensing). Licenses and permits may also be purchased at select DEP facilities and vendors.

New Regulations: The following new regulations were passed in 2009: 1) Elimination of the hunter orange requirement on state lands that are designated as archery only; 2) The use of crossbows is allowed on private lands in Deer Management Zones 11 and 12 during the January archery deer season; 3) The private land muzzleloader deer season is extended to the end of December; 4) The number of junior deer hunting days has been expanded to 2; 5) Deer hunters on private land are allowed to use a bow during the shotgun-rifle season in all zones; 6) Tagging requirements have changed from the use of Tyvek® tags to hunter generated paper tags; and 7) Change check station requirements after the first 4 days of the shotgun/rifle season to the phone-in system or internet reporting. Be sure to check the DEP website for more details on these regulations and the new tagging and reporting system (<http://www.ct.gov/dep/hunting>).

Regulated Deer Harvest

Regulated hunting is the most effective and cost-efficient method for maintaining deer populations at acceptable densities. During the 2008 hunting season, 12,682 deer were legally harvested and reported (Table 1). This represents a 14.6% increase from the 2007 harvest. Total deer harvest was higher than the previous 3-year average. Cooler temperatures on high harvest days (opening day, Saturdays, and Thanksgiving) during the 3-week firearms season, a moderate acorn crop (Figure 8), and snow cover throughout December likely contributed to the increase in harvest rates. The antlerless replacement tag harvest increased from 543 to 736 deer from 2007 to 2008. Deer harvested under the replacement antlerless and either-sex tag program (789) consisted of 24.5% of the total deer harvest on private land in zones 11 and 12. Shotgun/rifle hunters accounted for 56.8% of all deer taken in 2008, while archery hunters, landowners, and muzzleloader hunters accounted for 28.4%, 9.3%, and 5.4%, respectively. Since 2003, special hunt days have been available for youth hunters. Youth hunters continue to take advantage of the Junior Hunter Training Day for deer, which occurs the Saturday prior to opening day. The 3-year average harvest for the Junior Hunter Training Day has been 48 deer. As the number of youth hunting days increases to 2 in 2009, harvest is expected to increase. Landowner harvest consisted mainly of deer harvested with shotguns/rifles (1,158), while few deer were harvested with muzzleloaders (11) and bow and arrows (6). The source of landowner harvest for 1 deer was unknown. Harvest varied considerably by season and town (Appendix 1).

Table 1. Deer harvested during Connecticut's regulated hunting seasons, 2007-2008.

Season	Harvest 2007	Harvest 2008	3-year Average Harvest (2005-2007)	% of Total 2008	% Change from 2007 to 2008	% Change 3-year Average to 2008
Archery						
State Land	454	467	454	3.7%	2.9%	2.9%
Private Land	2,470	3,141	2,575	24.8%	27.2%	22.0%
Replacement Antlerless ^{A, B}	342	491	398	3.9%	43.6%	23.4%
Either-sex Tag ^{A, B}	33	44	31	0.3%	33.3%	43.5%
January ^B	210	272	173	2.1%	29.5%	56.9%
Replacement Antlerless ^{A, B}	32	76	31	0.6%	137.5%	142.6%
Either-sex Tag ^{A, B}	3	2	3	0.0%	-33.3%	-25.0%
Subtotal	2,924	3,608	3,029	28.4%	23.4%	19.1%
Muzzleloader						
State Land	181	145	171	1.1%	-19.9%	-15.4%
Private Land	544	545	563	4.3%	0.2%	-3.2%
Replacement Antlerless ^A	33	29	20	0.2%	-12.1.0%	47.5%
Either-sex Tag ^A	0	0	0	0.0%	0.0%	
Subtotal	725	690	734	5.4%	-4.8%	-6.0%
Shotgun/Rifle						
State Land A ^C	925	897	905	7.1%	-3.0%	-0.9%
State Land B ^C	198	226	238	1.8%	14.1%	-5.2%
Private Land	5,314	6,043	5,803	47.7%	13.7%	4.1%
Replacement Antlerless ^A	136	140	148	1.1%	2.9%	-5.2%
Either-sex Tag ^A	7	7	8	0.1%	0.0%	-16.0%
Subtotal	6,437	7,208 ^D	6,947	56.8%	12.0%	3.8%
Youth Hunting Day^E	51	34	48	0.3%	-33.3%	-29.2%
Landowner	976	1,176	1,062	9.3%	20.5%	10.7%
Total	11,062	12,682	11,772	100.0%	14.6%	7.7%

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

^B Included as part of private land archery total.

^C Includes controlled hunt areas.

^D Includes 42 harvested deer whose date and location were not recorded.

^E Harvest was included in shotgun/rifle totals for state and private land.

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 2008 (64,060) increased 6.0% from 2007 (60,395) (Table 2). Permit issuance increased for both state (5.1%) and private land muzzleloaders (4.5%). Landowner permit issuance increased slightly in 2008 and has fluctuated between 4,898 (1999) and 6,133 (1992) for the past 16 years. Issuance of shotgun/rifle permits in 2008 was similar to 2007. Overall, shotgun/rifle hunters purchased the largest number of permits (46.0%), followed by muzzleloader hunters (24.2%), archers (20.8%), and landowners (9.1%). Archery permit issuance increased 7.3% in 2008, exceeding 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-two percent of firearms deer permits were issued for use on private land and the remaining 38% were issued for state-managed lands.

Figure 1. Total deer permit issuance in Connecticut, 1975-2008.

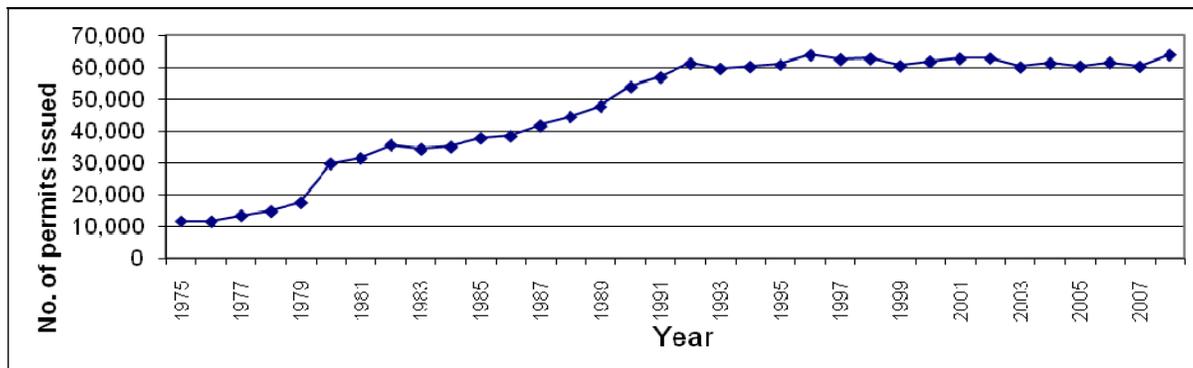


Table 2. Deer hunting permits issued in Connecticut for all regulated hunting seasons, 2006-2008.

Season	Permits 2006	Permits 2007	Permits 2008	3-year Average Permits 2005-2007	% of Total 2007	% Change 2007 to 2008	% Change 3-year Avg. to 2008
Archery	12,392	12,423	13,333	12,274	20.8%	7.3%	8.6%
Muzzleloader							
State Land	5,702	5,676	5,963	5,589	9.3%	5.1%	6.7%
Private Land	9,297	9,101	9,515	9,180	14.9%	4.5%	3.6%
Subtotal	14,999	14,777	15,478	15,769	24.2%	4.7%	4.8%
Shotgun/Rifle							
State Land A*	6,223	6,050	5,943	6,036	9.3%	-1.8%	-4.0%
State Land B*	4,001	4,225	5,029	4,072	7.9%	19.0%	20.3%
Private Land	18,249	17,468	18,478	17,985	28.8%	5.8%	2.7%
Subtotal	28,473	27,743	29,450	28,093	46.0%	6.2%	3.8%
Landowner	5,587	5,452	5,799	5,514	9.1%	6.4%	5.2%
Total	61,451	60,395	64,060	60,650	100.0%	6.1%	5.2%

*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 and 27.6% in 2004, then dropped slightly in 2005 (25.0%), and stabilized in 2006 (25.5%) and 2007 (24.3%). Hunter success in 2008 increased to 27.1%. Success rates for the remaining seasons varied from 2007 to 2008, with the state land muzzleloader season experiencing the greatest decrease and private land shotgun/rifle season experiencing the greatest increase. Compared to the 3-year average, success rates decreased or remained stable for all hunting seasons in 2008 except the archery, state land A, private land shotgun/rifle, and landowner season. In 2008, private land shotgun/rifle hunters had the highest annual success rate (32.7%), followed by archers (27.1%) and landowners (20.3%). Success rate for the

combined muzzleloader seasons was 4.5%. 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, 2007-2008.

Season	2007	2008	3-year Avg. Success Rate (2005-2007)	Difference from 2007	Difference from 3-year Avg.
Archery					
Combined ^a	24.3%	27.1%	24.9%	2.8%	2.1%
Muzzleloader					
State Land	3.3%	2.4%	3.1%	-0.9%	-0.7%
Private Land	5.9%	5.7%	6.1%	-0.2%	-0.4%
Combined	4.9%	4.5%	5.0%	-0.4%	-0.5%
Shotgun/Rifle					
State Land A	15.4%	15.1%	14.9%	-0.3%	0.2%
State Land B	4.8%	4.5%	5.8%	-0.3%	-1.3%
Private Land	29.1%	32.7%	31.8%	3.6%	0.9%
Combined	22.7%	24.5%	24.4%	1.8%	0.0%
Landowner	17.6%	20.3%	19.2%	2.7%	1.1%
Average^b	18.3%	19.8%	19.3%	1.5%	0.5%

^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.

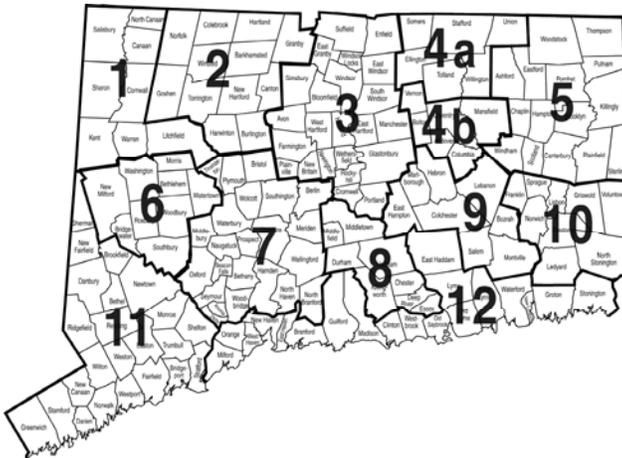
Archery Statistics

About 1 of 4 deer taken during the hunting season was harvested by a bowhunter. Seventy-three percent (2,646 - 2,240 private, 406 state) of the total archery harvest was taken during the early archery season (September 15 to November 18); 11% (379 - 337 private, 42 state) was taken during the 3-week shotgun/rifle season (open in zones 11 and 12 on private land and state land bowhunting only areas); 4% (156 - 150 private, 6 state) was taken during the muzzleloader season; 4% (155 - 142 private, 13 state) was taken during the late archery season (December 10 to December 31); and 8% (272) was taken during the January season open in zones 11 and 12 on private land only (January 1-31, 2009).

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.

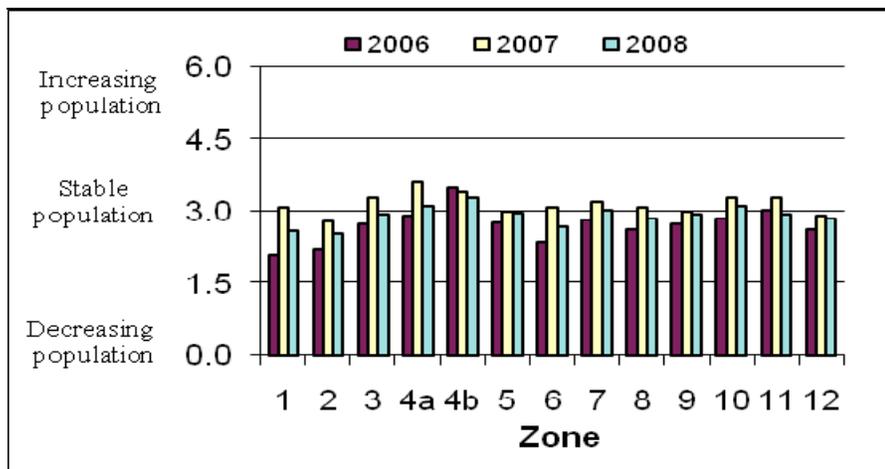
Figure 2. Connecticut's deer management zones, 2008.



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 (52%) who responded to the survey believed that the population was stable, 22% believed it was increasing or slightly increasing, and 26% believed it was decreasing or slightly decreasing. Deer management zones 1 and 2 had the lowest average rank (2.6 and 2.5; Figure 3) and zone 4 had the highest average rank (3.2). After 7 years of antlerless tag restrictions in zone 4A, hunters are seeing a noticeable increase in the deer population.

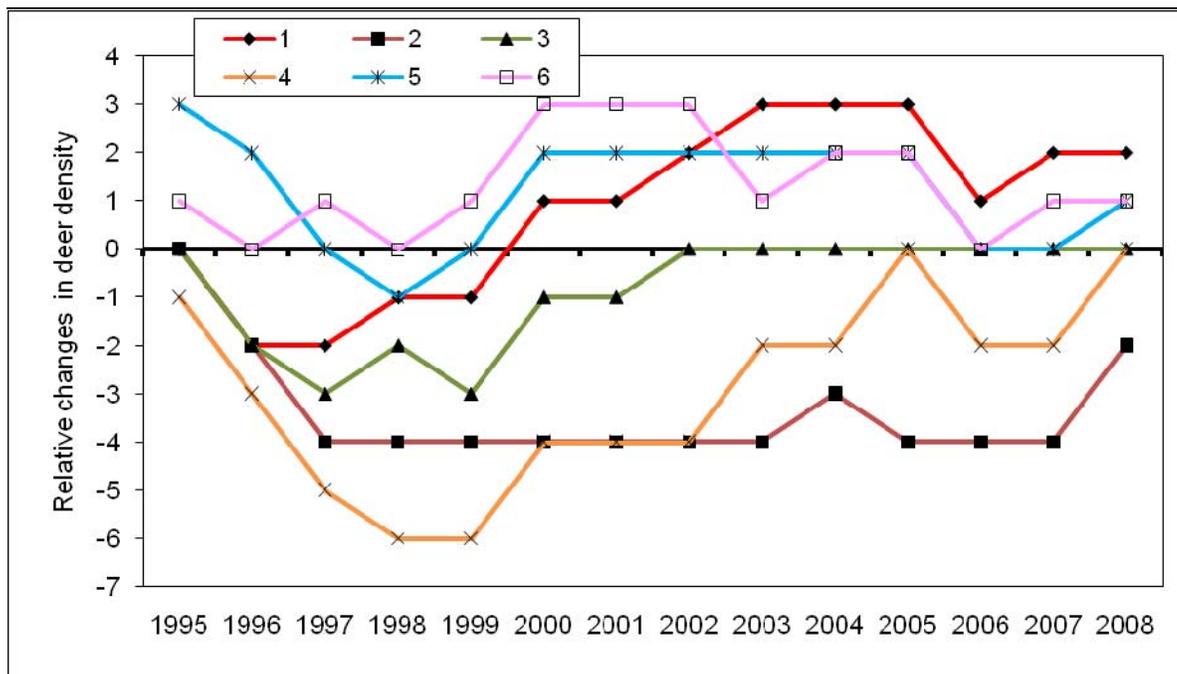
Figure 3. Perception of zonal deer population trends (average rank) by Connecticut's deer hunters, 2006-2008.



Population Trends

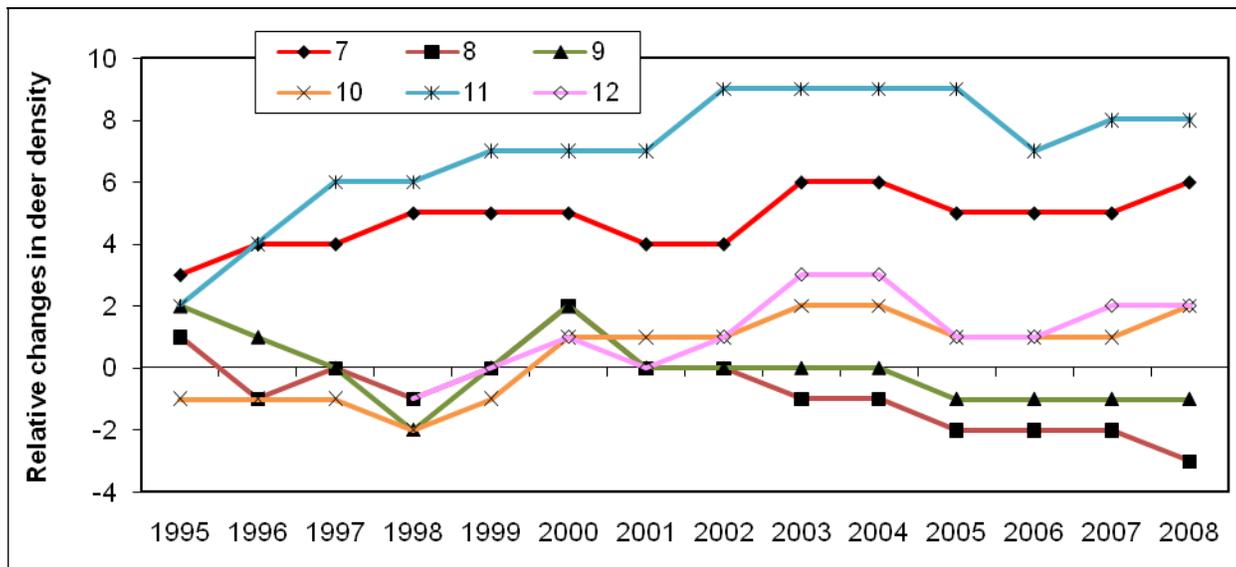
To assess the status of zonal deer populations in Connecticut, hunter perceptions and changes in harvest data (buck harvest/square mile, hunter success, yearling antler beam diameters, total deer mortality/square mile, and roadkills/square mile) were analyzed. This analysis suggests that from 2007 to 2008, 7 zones (1, 3, 6, 9, 11, 12) had stable populations, 1 zone (8) had decreasing to slightly decreasing populations, and 5 zones (2, 4, 5, 7, 10) had increasing to slightly increasing populations (Figures 4 and 5).

Figure 4. Trends in Connecticut deer population growth in deer management zones 1-6 from 1995 to 2008.*



*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 deer management zones 7-12 from 1995 to 2008.*

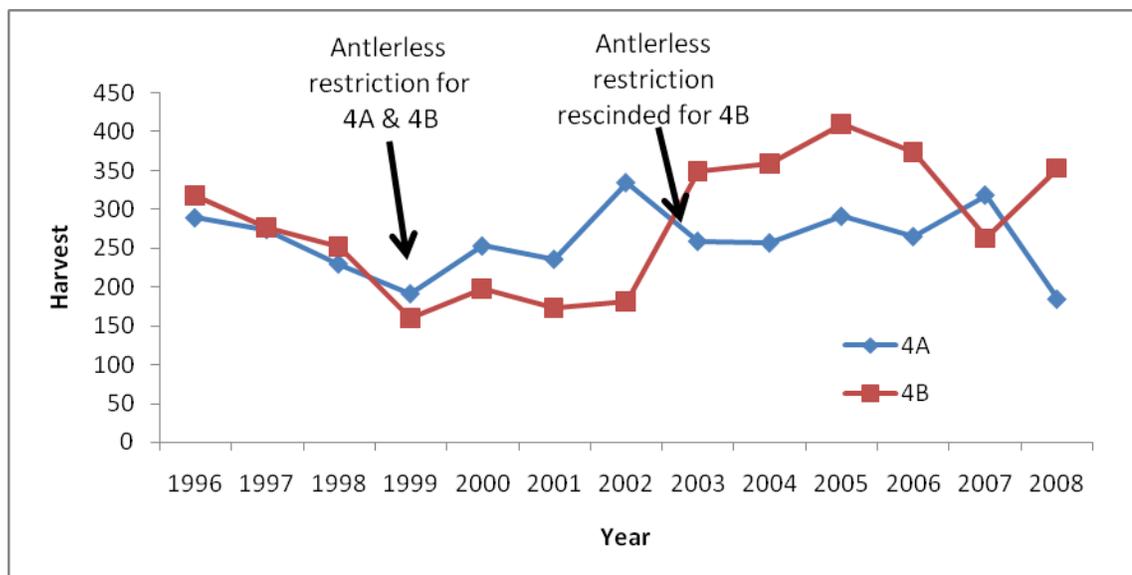


*Horizontal lines represent a stable population relative to the previous year. Lines that project upwards or downwards represent increasing or decreasing populations when compared to the previous year.

Zonal Deer Management

Because deer populations vary across the state, Connecticut developed 12 deer management zones. Management strategies in each zone may vary depending on population growth. 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 retained, while the use of antlerless tags was again allowed in zone 4B (southern portion). The percentage of antlered deer harvested was larger for zone 4A (55%) than zone 4B (38%) in 2008. This was expected due to the restricted use of antlerless tags in zone 4A (Figure 6).

Figure 6. Twelve-year trend of shotgun/rifle deer harvest in deer management zones 4A and 4B.



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 2008. 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. These programs have resulted in a substantial increase in the harvest of antlerless deer (Figure 11).

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 2008, 45% (8,340 of 18,478) 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 2008 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 12). Highest private land deer harvests were reported for zones 1, 5, 11, and 12. Zones 5 and 10 had the highest deer harvest per square mile (2.6 and 2.1) and zones 5 and 9 had the greatest density of hunters (7.2 and 6.6 per square mile). Zone 11 had the highest hunter success rate (40%). This is likely due to relatively high deer densities, use of bait, and availability of replacement tags. Hunter success rates were lowest in zone 2. The 3-year trend in hunter success rates declined for 1 of 12 zones (Table 5). 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. Five deer management zones (4B, 5, 7, 11, and 12) have continued to produce relatively high hunter success rates over the past 3 years (Table 5).

Archery Season

Statewide Success: Based on the number of kill report cards submitted by bowhunters, 1 of 3 (36%) 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). The archery deer harvest in zone 11 was at least 3 times higher than all other zones. Based on hunter surveys, the actual harvest rate is higher than the reported harvest rate from kill cards.

Table 4. Zonal hunter numbers, harvest, and success rates for private land during the 2008 shotgun/rifle hunting season.

Zone	2008 Zone	% of	2008 Estimated		Area	Deer	2008	2008
	Hunted	Hunters	# of Private	2008				
	Private Land ^A	Answered ^A	Land Shotgun/	Harvest	(sq. miles)	Sq. Mile	Sq. Mile	Rate
	Shotgun/Rifle	Question	Rifle					
1	770	9.2	1,706	556	344.59	1.6	5.0	33%
2	637	7.6	1,411	297	410.69	0.7	3.4	21%
3	414	5.0	917	292	273.33	1.1	3.4	32%
4	736	8.8	1,631	537	334.16	1.6	4.9	33%
5	1,453	17.4	3,219	1,161	445.94	2.6	7.2	36%
6	587	7.0	1,301	338	260.03	1.3	5.0	26%
7	415	5.0	919	349	373.08	0.9	2.5	38%
8	453	5.4	1,004	272	169.11	1.6	5.9	27%
9	837	10.0	1,854	543	279.39	1.9	6.6	29%
10	671	8.0	1,487	508	244.36	2.1	6.1	34%
11	677	8.1	1,500	595	291.53	2.0	5.1	40%
12	690	8.3	1,529	592	358.39	1.7	4.3	39%
Total	8,340	100.0	18,478	6,040	3,785	1.6	4.9	33%

^ABased on question on application asking hunters which zone they primarily hunt in.

Table 5. Zonal comparisons in private land shotgun/rifle harvest, hunter distributions, and success rates, 2006-2008.

Zone	Area (sq. miles)	Deer Harvest/Sq. Mile			Hunters/Sq. Mile			Hunter Success Rate %		
		2006	2007	2008	2006	2007	2008	2006	2007	2008
1	344.59	1.4	1.5	1.6	5.0	5.1	5.0	28	29	33
2	410.69	0.7	0.6	0.7	3.3	3.4	3.4	22	18	21
3	273.33	1.0	1.0	1.1	3.2	2.9	3.4	31	33	32
4	334.16	1.5	1.3	1.6	4.3	4.4	4.9	35	30	33
4A	213.50	0.9	0.9	0.9	4.3 ^a	4.4 ^a	4.9 ^a	21	20	18
4B	120.66	3.2	2.0	2.0	4.3 ^a	4.4 ^a	4.9 ^a	72	45	41
5	445.94	2.3	2.0	2.6	7.0	7.0	7.2	33	29	36
6	260.03	1.4	1.3	1.3	5.1	5.4	5.0	27	24	26
7	373.08	0.7	0.7	0.9	2.6	2.3	2.5	29	30	38
8	169.11	1.6	1.4	1.6	5.7	5.2	5.9	28	27	27
9	279.39	2.2	1.7	1.9	6.1	5.7	6.6	37	30	29
10	244.36	1.6	1.6	2.1	5.8	6.1	6.1	27	27	34
11	291.53	2.0	2.0	2.0	6.2	6.4	5.1	33	32	40
12	358.39	1.6	1.8	1.7	4.6	4.4	4.3	36	40	39
Total	3,785	1.5	1.4	1.6	4.8	4.8	4.9	31	29	33

^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, 2008.

Zones	2008 Zone Hunted Private Land Archery ^b	% of Hunters Answered Question ^B	2008 Estimated # of Archery Hunters	2008 Harvest	2008 Success Rate
1	382	6.8%	902	136	15.1
2	450	8.0%	1,063	107	10.1
3	313	5.5%	739	100	13.5
4 ^a	484	8.6%	1,143	246	21.5
5	666	11.8%	1,573	300	19.1
6	294	5.2%	695	127	18.3
7	424	7.5%	1,002	222	22.2
8	331	5.9%	782	96	12.3
9	395	7.0%	933	136	14.6
10	300	5.3%	709	156	22.0
11	1,118	19.8%	2,641	1,555	58.9
12	487	8.6%	1,150	427	37.1
Total	5,644	100.0%	13,333	3,608	27.1

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

^b Based on question on application asking hunters which zone they primarily hunt in.

Fall Acorn Crop

Acorns are a preferred food for white-tailed deer during fall and winter. Acorn availability 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 2008, 62% of the hunters who responded to the survey ranked the fall acorn crop as scarce, 31% as moderate, and 8% as abundant. Zone 12 had the highest average rank (2.1) and zone 11 had the lowest average rank (0.87) (Figure 7). On a scale of 0-6, the average rank statewide was 1.4.

The past 16 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, 2005-2008.

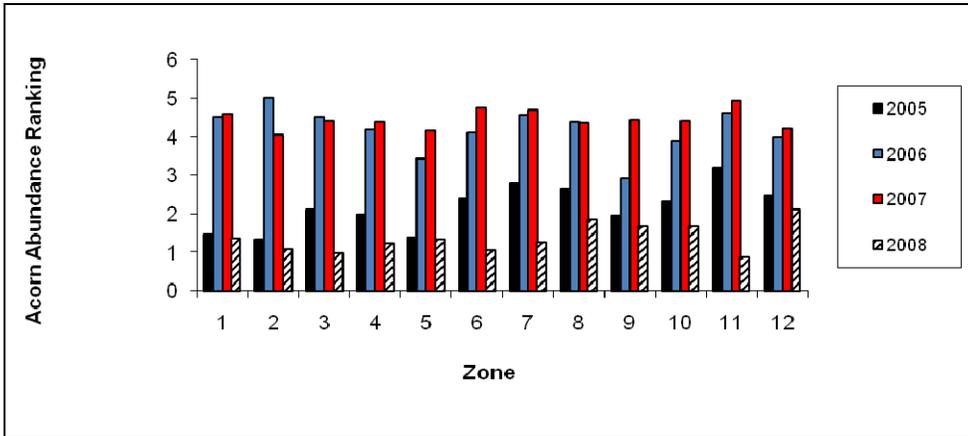
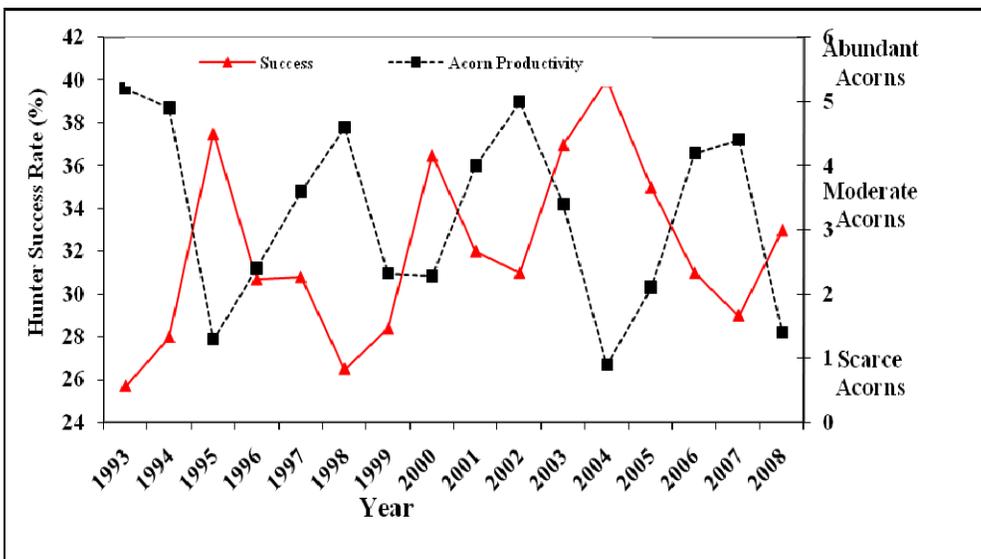


Figure 8. Relationship between private land shotgun/rifle hunter success rates and fall acorn productivity, 1993-2008.



Private Land Deer Harvest

The 2008 private land deer harvest was highest for deer management zones 5, 11, and 12 (Table 7). Zonal harvest levels have fluctuated in most zones over the past 11 years (Table 7). These fluctuations likely reflect the difference in weather conditions, snow cover, acorn abundance, and deer densities. Highest total deer harvest for the last 7 years has been observed in zone 11, and the harvest in zone 12 has nearly 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 increased 19.5% from 2007 to 2008.

Table 7. Private land deer harvest for all seasons (excluding landowner) in each of Connecticut's deer management zones, 1998-2008.

Zone	Year										
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
1	1,116	910	1,184	936	937	796 ^c	828	811	639	680	710
2	394	360	389	351	259	373 ^b	383	369	357	323	385
3	549	397	529	442	478	457	434	413	362	338	397
4 ^a	678	583	729	662	471						
4A						237 ^b	207	273	218	259	293
4B						397	445	476	467	329	471
5	1,382	1,612	2,061	1,651	1,293	1,250 ^c	1,510	1,607	1,348	1,165	1,488
6	627	808	909	854	746	550 ^c	596	544	511	458	489
7	518	529	624	524	489	564 ^b	618	473	454	438	584
8	389	486	523	433	378	463	514	467	398	330	360
9	894	1,208	1,593	1,408	1,197	873 ^c	882	817	757	628	693
10	468	597	746	713	519	521	664	567	504	504	640
11	1,020	1,237	1,400	1,562	1,839	2,084 ^b	2,128	1,799	1,898	1,846	2,179
12	627	679	720	646	636	1,272 ^b	1,330	1,080	976	1,030	1,040
Total	8,662	9,406	11,407	10,182	9,242	9,793	10,485	9,613	8,832	8,328	9,955
% Change	-14.1%	8.6%	21.3%	-10.7%	-9.2%	6.0%	7.1%	-8.3%	-8.1%	-5.7%	19.5%

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

^b In 2003 town/towns added to zone.

^c In 2003 town/towns removed 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 2008 indicated that the deer herd in most zones was in fair to good condition. Mean beam measurements exceeded 18.0 in 5 of 12 zones (zones 2, 3, 6, 9 and 11; Table 8). Mean antler beam measurements typically ranged between 17-18mm in 10 of the past 12 years. Minor variations in beam measurements from year to year are probably due to fluctuations in food availability, winter conditions, or other variables. Most zones have fluctuated within the fair to good range since 1995.

Table 8. Average antler beam diameter (mm) of yearling males in each of Connecticut's deer management zones, 1996-2008.*

Zone	Year											
	1996	1997	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
1	16.4	16.6	17.9	17.2	17.7	18.9	17.4	16.8	17.0	16.4	17.3	17.7
2	17.7	18.0	18.1	18.1	16.7	18.1	18.6	16.9	19.2	17.0	18.4	19.4
3	17.6	18.7	19.3	18.7	15.7	18.3	18.2	16.1	19.8	16.4	17.8	18.7
4 ^a	15.9	17.0	18.4	18.7	16.0	17.9						
4A ^a							18.7	16.2	15.8	15.4	17.8	17.5
4B ^a							18.0	18.0	17.8	16.7	16.9	17.9
5	16.6	16.8	18.3	18.2	17.0	17.8	16.4	18.1	15.8	16.3	16.1	17.4
6	17.2	18.0	18.1	18.1	16.3	18.4	18.0	16.9	15.7	17.0	17.6	18.3
7	17.2	17.5	17.1	18.3	16.1	17.9	17.4	17.8	17.5	16.1	17.9	17.3
8	15.7	17.5	18.0	17.4	16.8	17.3	18.6	17.6	20.5	17.5	18.8	17.6
9	16.6	17.1	19.1	17.9	16.5	18.4	17.3	16.7	17.7	17.5	17.9	18.5
10	17.2	18.1	17.6	17.1	16.0	17.9	15.9	17.5	15.5	14.5	16.2	17.4
11	18.1	16.5	16.3	16.8	18.7	17.2	17.9	17.4	15.3	20.3	16.4	18.7
12	ND*	ND*	17.4	17.1	15.7	18.2	17.1	17.1	17.8	16.2	16.4	16.7
Average	16.9	17.3	17.8	17.4	16.9	18.0	17.6	17.2	17.3	16.7	17.1	17.9

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

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

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 declined from 2007 to 2008 for harvested young-of-year and increased for yearling and adult males (Table 9). Weights of harvested young-of-year males decreased by 16 pounds in zone 4A and increased by 3 pounds in zone 11. During the 2008 shotgun/rifle season, 7 bucks weighing 200 pounds or more were checked in at check stations when biological data were being collected (4 days; Table 10). The heaviest three bucks were harvested in Kent (258 lbs.), Ledyard, (216 lbs), and Enfield (215 lbs.).

Table 9. Average dressed weights (lbs.) of male deer harvested during the shotgun/rifle hunting season, 2006-2008.

Zone	Young-of-Year			Yearling			Adult		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
1	76.0	69.9	64.3	104.3	107.1	115.2	136.2	142.5	156.7
2	72.5	68.0	53.8	110.6	109.5	121.6	143.4	145.6	150.2
3	68.0	66.0	61.4	103.5	98.7	112.4	135.2	144.9	151.2
4A	57.0	64.4	48.0	99.0	105.5	105.3	134.7	139.3	141.4
4B	64.1	68.2	60.1	103.1	102.3	108.1	138.9	135.1	145.7
5	64.4	65.9	61.9	105.9	101.6	106.4	137.7	138.9	140.7
6	71.3	74.0	70.0	109.5	106.6	112.0	144.2	139.2	153.4
7	63.4	74.4	69.2	102.5	103.0	113.2	142.0	139.4	151.3
8	66.0	62.3	59.4	104.4	102.2	104.9	142.4	147.0	143.6
9	65.0	66.2	64.8	107.5	101.5	111.2	139.1	133.9	162.3
10	66.8	73.6	67.0	107.5	107.1	113.5	140.1	138.9	146.1
11	62.4	60.2	62.7	103.5	101.9	105.2	129.9	129.2	147.8
12	64.5	63.9	56.4	100.5	103.9	105.6	136.5	135.8	140.1
Average	66.3	67.5	61.5	104.7	103.9	110.4	138.5	139.2	148.5

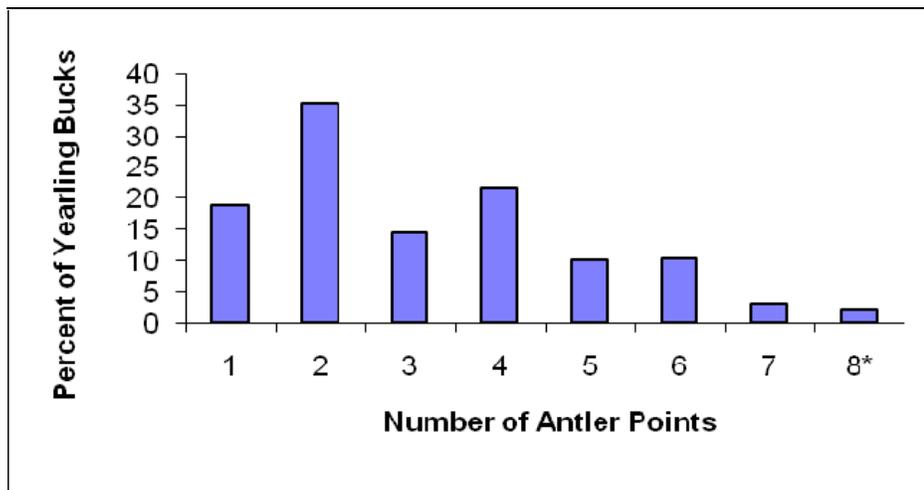
Table 10. Bucks over 200 pounds (dressed weight) registered at biological check stations (4 days) during the shotgun/rifle season, 2008.

Town	Weight (lbs)	Points
Kent	258	8
Ledyard	216	9
Enfield	215	8
Washington	206	10
Middlefield	203	8
Mansfield	200	8
Roxbury	200	8

Antler Points

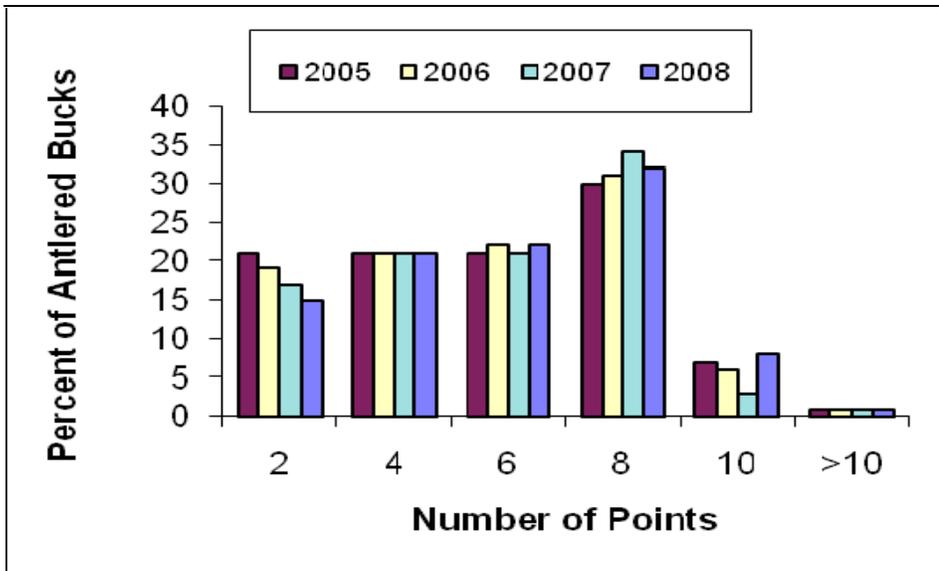
Deer age, nutritional status, and genetics affect the number of antler points on bucks. Number of antler points on yearling bucks aged at check stations ranged from 1 to 8 in 2008 (Figure 9). Most yearling bucks had 2 (35.3%) or 4 (21.8%) points and 15% had 6 or more points in 2008 (Figure 9, Appendix 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, 2008.



*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, 2005-2008.



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). Overall deer harvest sex ratios have been similar over the past 3 years (1.3 males per female) (Table 12). In 2008, 54% (6,790) 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 2008.

	Muzzleloader	Shotgun/Rifle	Archery	Landowner	Crop Damage	Total
Male:Female	0.73:1	1.4:1	0.88:1	1.40:1	0.82:1	1.13:1
Antlered:Antlerless	0.45:1	.92:1	0.59:1	0.95:1	0.55:1	0.77:1

Table 12. Sex ratios (male:female) of deer harvested during Connecticut's regulated hunting seasons, 2005-2008.

2007		2008		Males per Female				3-year Average
Males	Females	Males	Females	2005	2006	2007	2008	(2005-2007)
6,676	5,074	6,790	5,848	1.3:1	1.3:1	1.3:1	1.1:1	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 first had access to replacement tags in zone 11, the buck harvest has remained relatively stable while the antlerless harvest in that zone has increased nearly 5 times (from 200 to almost 1,000 deer annually). During this time, the number of roadkills in zone 11 has shown a steady decline (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 (1998-2008) (Figure 12).

Check stations in zones 11 and 12 issued 1,501 replacement antlerless tags (508 shotgun/rifle, 940 archery, 53 muzzleloader) and 168 either-sex tags (24 shotgun/rifle, 135 archery, 9 muzzleloader) during the 2008 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. Roadkill trends and comparisons of antlered and antlerless deer harvests during the archery deer season in deer management zone 11, 1995-2008.

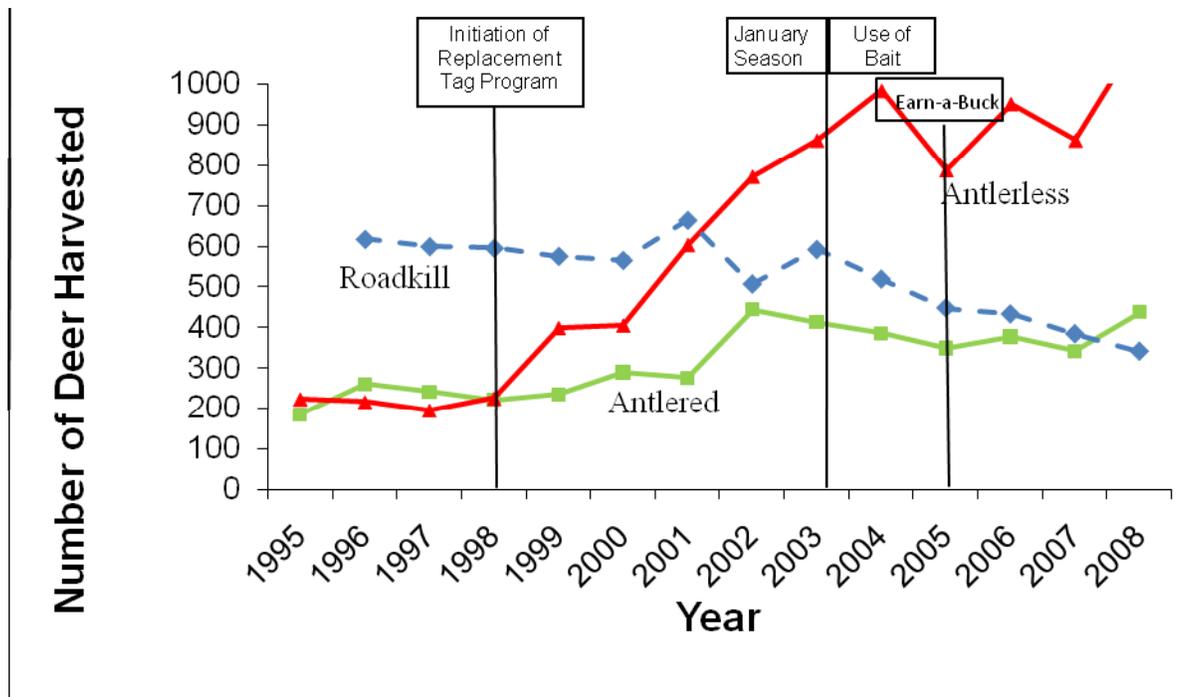


Figure 12. Sex ratios of harvested deer from deer management zone 11 after implementation of the archery antlerless replacement tag program, 1994-2008.

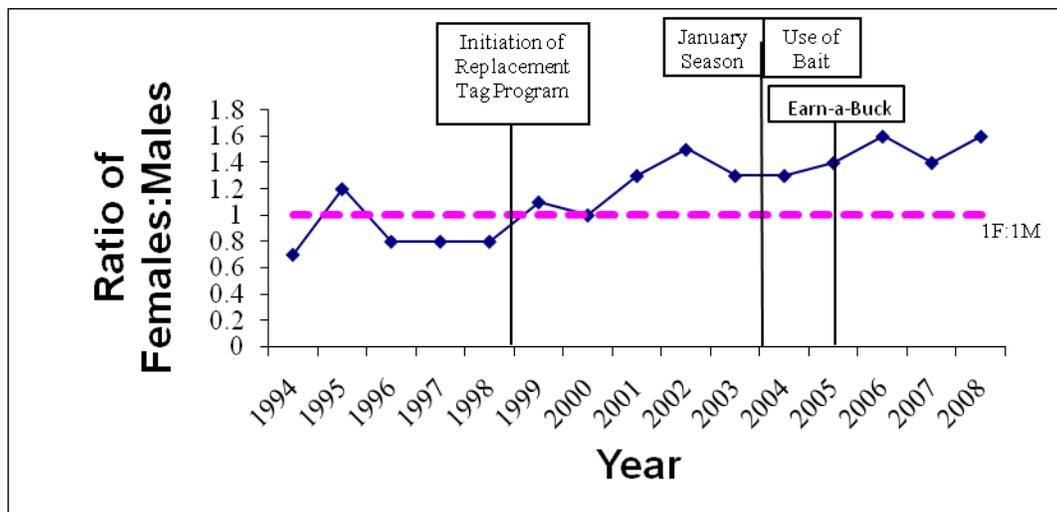


Table 13. Issuance and use of replacement antlerless and either-sex tags during the archery, firearms, and muzzleloader deer hunting seasons in 2008.

	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
2008 Issued	940	135	508	24	53	9	1,501	168
2008 Used	567	46	140	7	29	0	736	53
Percentage Used	60.3%	34.1%	27.6%	29.2%	54.7%	0.0%	49.0%	31.5%

Deer Hunter Expenditures, Effort, and Venison Calculations

Deer hunting-related expenditures contribute significantly to Connecticut's economy. Deer permit sales generated \$873,364 in 2007 and \$932,332 in 2008 to the Connecticut General Fund. In addition, data collected from the annual deer hunter surveys indicated that Connecticut deer hunters spent an estimated \$11,185,347 on deer hunting-related goods and services in 2008.

In 2008, deer hunters spent a cumulative total of 438,116 days afield. Private and state land shotgun/rifle hunters used the greatest percentage of available hunting days during those seasons (32.7% and 41.9%). Although bowhunters used a smaller percentage of available hunting days (22.9%), the archery season is much longer than the firearms season. Connecticut deer hunters collectively spent slightly less time (33.1 days per deer taken) and less money (\$882 per deer taken) in 2008 than in 2007 (34.2 days at \$925 per deer taken). In 2008, hunters harvested an estimated 633,400 pounds (avg. 50 lbs. of meat/hunter) (283 tons) of venison at an estimated value of \$3,160,666 (\$4.99/lb.).

2008 Subscription Rates for State Land Lottery Permits

In 2008, 7,611 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 established permit quota. In 2008, the total number of no-lottery hunt areas was 18. Seventy 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) 12, 100% of A season permits and 20% of B season permits were issued. Consequently, DLHA 12 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).

Moose Sightings

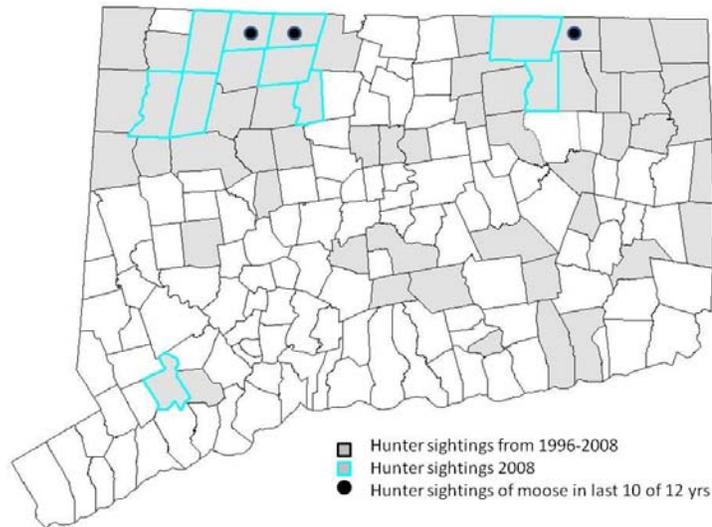
An increasing moose population in Massachusetts has led to an increased number of moose wandering or dispersing into Connecticut. In an effort to monitor trends in moose sightings in Connecticut, a question was added to the deer hunter survey card in 1996 regarding hunter observations of moose during the fall hunting season. Deer hunters reported 28 moose sightings in 10 towns in 2008 and 402 sightings over the past 13 years (Figure 13). During this 13-year period, moose sightings have been reported in 59 different towns. Sightings have also been reported from 9 to 22 different towns each year and in 8 towns in at least 6 of the last 12 years. Moose have been observed in Colebrook, Hartland, and Union for 10 of the last 12 years. Most towns where hunters report moose sightings occur along the Connecticut-Massachusetts border. In 2008, an average of 1 moose was observed by hunters for every 1,281 hunter-days spent in the field. This is an increase in the number of days spent hunting to observe a moose compared to 2007, when 1 moose was observed for every 755 hunter-days in the field. Currently, Connecticut has no open hunting season for moose.

Table 14. Percent of available A and B season hunting slots filled through the annual, state-administered shotgun deer lottery, 2006-2008.

Deer Lottery Area	% of Hunting Slots Filled					
	2006		2007		2008	
	A	B	A	B	A	B
1	68	0	64	NL	64	NL
2	76	0	79	NL	77	NL
3	57	NL	44	NL	54	NL
4	35	NL	37	NL	37	NL
5	82	NL	70	NL	74	NL
6	100	0	100	NL	100	NL
7	100	75	100	100	100	100
8	100	100	100	100	100	100
9	100	100	100	100	100	100
10	100	29	100	NL	100	NL
11	100	16	100	36	100	32
12	100	17	100	21	100	20
13	95	0	100	NL	98	NL
14	100	6	95	0	100	3
15	100	71	100	61	100	50
16	64	NL	69	NL	77	NL
17	27	NL	33	NL	32	NL
18	83	NL	82	NL	76	NL
19	27	NL	30	NL	22	NL
20	77	0	69	NL	58	NL
21	27	NL	26	NL	28	NL
22	85	0	91	NL	72	NL
23	40	NL	44	NL	40	NL
24	91	0	74	NL	80	NL
25	73	0	46	NL	40	NL
26	100	100	100	100	100	100
27	100	100	100	100	100	100
51 (Yale)	100	44	100	30	100	36
52 (Bristol)	100	100	100	100	100	100
53 (Maromas)	100	100	100	100	100	100
54 (Skiff Mt.)	100	26	100	29	100	0
56 (BHC-Hemlock)	100	100	100	100	100	100
57 (Colebrook)	28	0	44	0	55	0

NL=No Lottery

Figure 13. Moose sightings reported on deer hunter surveys, 1996-2008.



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. Controlled hunts have been implemented on the property since 1984 in an effort to reduce deer impacts on forest regeneration. During the 2008 controlled hunt, 67 deer (34 males, 33 females) were harvested.

Bristol Water Company (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 survey results were summarized, 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 2008 hunting season, 36 deer were harvested (23 males, 13 females).

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 muzzleloader hunting to maintain deer densities at levels compatible with available habitat. In 2008, hunters harvested 16 deer (10 males, 6 females).

Skiff Mountain (Area 54): Skiff Mountain is a 710-acre property in Sharon owned by Northeast Utilities. It is open to shotgun and muzzleloader hunting. In 2008, hunters harvested 10 deer (6 males, 4 females).

Centennial Watershed State Forest (formerly known as Bridgeport Hydraulic Company) (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 2008, 86 deer (39 males, 47 females) were harvested.

MDC Colebrook Reservoir/Hogback Dam (Area 57): This 4,159-acre parcel in Colebrook was opened to hunting in 1999. In 2008, 5 deer (4 males, 1 female) were harvested.

Devil's Den: The Nature Conservancy owns this 1,660-acre property in Weston and Redding. In 2008, 27 deer were removed (14 males, 13 females).

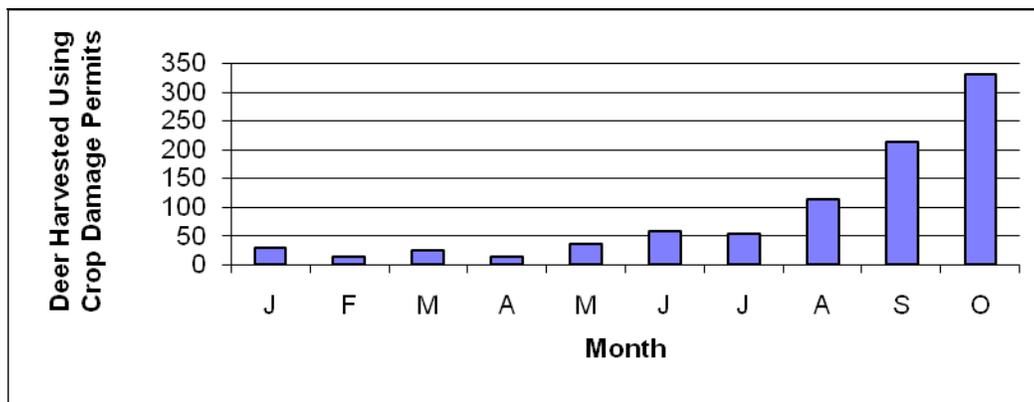
Bluff Point: Controlled hunts and DEP deer removals at Bluff Point Coastal Reserve in Groton have been implemented over the past 12 years to reduce and maintain the deer population at about 25 animals. Since the program started in 1996, 512 deer have been removed from Bluff Point, resulting in improved deer herd health and ecosystem stability. In December 2008, the deer population was estimated to be 42 deer. In February 2009, 18 deer were removed by DEP personnel. After the February 2009 removal, the population was estimated to be approximately 24 deer.

Greenwich: Greenwich Audubon would like to reduce the deer population so as to restore the biological health of this 285-acre sanctuary located in northern Greenwich. In 2008, hunters from Greenwich Sportsmen's and Landowners Association harvested 22 deer (18 females, 3 males, 1 unknown).

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 2008 calendar year, 883 deer were taken with crop damage permits (Appendix 7). From 1993-2008, annual deer harvest with crop damage permits has fluctuated between 543 and 946 deer. Harvest in zone 11 accounted for 13% of deer removed with crop damage permits in 2008. Crop damage harvest increased steadily from May to October, with 62% 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, 2008.



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 2008, 2,295 non-hunting deer mortalities were reported (Appendix 8). Of those, 2,190 were killed in deer-vehicle collisions. This equates to an average of 6 deer being killed per day on Connecticut roads and highways. Roadkills accounted for 95% of all reported non-hunting mortality (excluding crop damage) in 2008. 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 2008 was 10,950. Sixteen percent (341) of all reported roadkilled deer in Connecticut occurred in deer management zone 11 (Fairfield County, Figure 2) in 2008 (Appendix 9). The number of roadkills in DMZ 11 has shown a steady decline since the implementation of the replacement tag program, extension of the archery season to include January, and the legalization of baiting (Figure 11). Number of roadkills per square mile in DMZ 4 exceeded that of DMZ 11 for the first time in 3 years. Non-hunting mortality comprised 14% 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 from, 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, Michigan, 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 the enactment of emergency regulations restricting the movement of live animals into the state. In 2003, the DEP began its first intensive CWD surveillance program. From 2003 to 2007, a total of 2,480 samples have been collected from hunter harvested and roadkilled deer and tested at either the University of Connecticut's Department of Pathobiology and Veterinary Science or the Wisconsin Veterinary Diagnostic Laboratory, and all have tested negative for CWD. In 2004, 317 samples were collected from zone 11 and all tested negative for CWD. 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. Similarly, in 2007, 623 samples were tested, 269 from high-risk areas (zones 1, 6, and 11) along the Connecticut/New York border and 354 from the remainder of the state. In 2008, 632 samples were tested, 298 from high-risk areas and 334 from the remainder of the state. All samples were negative for CWD. The DEP will continue to monitor for CWD as long as funding is available.

Conclusion

Over the past 30 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. In 2008, permit issuance increased to its highest point in history. The cause for this increase is unknown, but could be attributed to the poor economy, where harvesting one's own food may be a desirable means of obtaining quality protein. 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 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, check the DEP website (www.ct.gov/dep) or 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 Wildlife Division offices or online (www.ct.gov/dep/lib/dep/wildlife/pdf_files/game/urbandeer07.pdf) to assist communities in developing effective deer management programs. The Northeast Deer Technical committee made available a booklet in 2009 "*An Evaluation of Deer Management Options*" which can also be found online (www.ct.gov/dep/lib/dep/wildlife/pdf_files/game/deeroptions.pdf).

Appendix 1. Total deer harvest and reported roadkilled deer by town, 2008.

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Andover	17	52	7	7	0	11	0	94
Ansonia	3	2	0	0	0	1	0	6
Ashford	29	150	44	17	9	25	0	274
Avon	6	23	0	1	1	22	3	56
Barkhamsted	9	23	10	3	0	8	0	53
Beacon Falls	7	31	2	4	0	5	0	49
Berlin	10	46	2	5	8	5	0	76
Bethany	17	38	2	3	0	9	0	69
Bethel	46	39	3	2	0	15	4	109
Bethlehem	8	24	5	2	0	9	0	48
Bloomfield	11	27	0	0	0	1	2	41
Bolton	4	21	1	9	19	28	0	82
Bozrah	10	32	15	7	5	10	0	79
Branford	3	8	0	0	3	2	0	16
Bridgeport	2	0	0	0	0	1	0	3
Bridgewater	6	34	7	3	6	4	0	60
Bristol	2	8	1	0	0	8	1	20
Brookfield	73	24	0	2	0	6	0	105
Brooklyn	12	61	22	7	10	21	0	133
Burlington	12	36	1	4	0	23	0	76
Canaan	9	52	8	3	5	13	0	90
Canterbury	17	66	21	8	3	13	1	129
Canton	4	16	3	1	2	9	0	35
Chaplin	9	89	11	10	0	4	0	123
Cheshire	24	35	1	3	20	24	1	108
Chester	9	28	1	3	0	3	0	44
Clinton	8	12	1	0	1	2	0	24
Colchester	34	118	20	12	5	45	0	234
Colebrook	4	16	1	0	0	0	0	21
Columbia	9	66	19	3	14	14	1	126
Cornwall	12	82	10	5	3	10	0	122
Coventry	37	119	26	9	7	29	2	229
Cromwell	2	9	0	1	1	11	1	25
Danbury	49	31	0	5	0	24	0	109
Darien	26	0	0	0	0	11	3	40
Deep River	5	9	7	2	8	1	0	32
Derby	2	2	0	0	0	3	0	7
Durham	12	62	1	8	0	5	0	88
East Granby	2	12	3	1	0	4	0	22
East Haddam	45	159	44	11	2	13	1	275
East Hampton	15	77	14	5	4	7	0	122
East Hartford	1	2	0	0	3	10	1	17
East Haven	9	10	0	0	0	1	2	22
East Lyme	28	53	5	13	1	28	0	128
East Windsor	12	29	0	5	0	4	0	50
Eastford	19	91	10	3	0	4	0	127

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Easton	90	83	3	6	9	35	7	233
Ellington	6	31	6	2	1	18	0	64
Enfield	6	29	1	4	2	32	3	77
Essex	3	11	2	0	0	1	0	17
Fairfield	113	8	0	3	4	5	6	139
Farmington	2	10	0	0	8	25	3	48
Franklin	15	76	13	7	4	6	0	121
Glastonbury	11	63	5	6	48	39	4	176
Goshen	14	66	15	5	5	4	0	109
Granby	11	36	6	1	0	0	0	54
Greenwich	102	3	0	3	0	5	2	115
Griswold	9	94	18	9	31	4	1	166
Groton	12	20	2	0	5	17	1	57
Guilford	36	46	8	3	0	25	1	119
Haddam	26	97	17	12	2	6	1	161
Hamden	13	12	4	4	32	4	0	69
Hampton	17	76	23	3	11	9	0	139
Hartford	0	0	0	0	0	2	0	2
Hartland	8	34	2	4	0	2	0	50
Harwinton	24	45	7	1	3	16	0	96
Hebron	18	81	15	3	4	40	1	162
Kent	15	81	10	9	3	6	0	124
Killingly	15	84	26	9	14	36	0	184
Killingworth	8	52	6	5	0	4	1	76
Lebanon	22	169	34	13	44	24	0	306
Ledyard	16	65	11	4	6	36	0	138
Lisbon	6	21	8	3	1	3	0	42
Litchfield	28	80	23	3	9	36	1	180
Lyme	24	100	15	18	10	1	0	168
Madison	25	14	3	3	0	9	1	55
Manchester	12	12	1	2	0	15	3	45
Mansfield	24	96	16	4	11	64	1	216
Marlborough	9	62	6	11	0	25	0	113
Meriden	1	17	0	0	1	18	0	37
Middlebury	11	12	3	1	0	7	1	35
Middlefield	11	35	6	1	29	0	0	82
Middletown	22	69	7	7	3	6	0	114
Milford	11	1	0	0	4	4	2	22
Monroe	47	36	8	0	2	2	0	95
Montville	19	56	7	4	7	34	1	128
Morris	7	24	3	0	11	7	0	52
Naugatuck	9	33	1	1	0	7	0	51
New Britain	3	1	0	0	0	6	1	11
New Canaan	74	2	0	0	0	26	10	112
New Fairfield	21	35	4	4	0	22	0	86
New Hartford	5	31	18	3	5	7	0	69
New Haven	0	1	0	0	0	2	0	3

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
New London	3	0	0	0	0	0	0	3
New Milford	32	56	16	6	12	5	0	127
Newington	0	2	0	0	0	0	0	2
Newtown	159	143	6	9	26	17	0	360
Norfolk	1	30	2	2	0	5	0	40
North Branford	7	18	0	4	3	12	0	44
North Canaan	0	30	1	0	2	1	0	34
North Haven	7	8	0	0	0	4	0	19
North Stonington	26	104	17	14	0	5	1	167
Norwalk	31	2	0	0	0	6	0	39
Norwich	17	70	4	3	0	19	1	114
Old Lyme	54	60	3	4	0	34	0	155
Old Saybrook	4	6	1	0	0	7	1	19
Orange	15	7	0	0	0	14	0	36
Oxford	9	48	7	0	8	17	0	89
Plainfield	30	93	25	6	0	13	0	167
Plainville	1	7	0	0	0	0	0	8
Plymouth	4	28	7	2	0	9	0	50
Pomfret	32	144	22	19	27	18	0	262
Portland	7	51	5	3	4	15	0	85
Preston	11	53	15	4	17	6	0	106
Prospect	9	18	1	2	0	32	0	62
Putnam	9	22	11	2	0	27	0	71
Redding	162	97	7	12	13	42	0	333
Ridgefield	274	47	0	9	0	30	5	365
Rocky Hill	1	4	0	0	3	0	0	8
Roxbury	13	36	4	3	8	8	0	72
Salem	9	59	12	3	0	14	0	97
Salisbury	38	131	13	8	21	14	0	225
Scotland	23	73	8	13	5	8	0	130
Seymour	12	19	1	19	0	5	0	56
Sharon	26	141	12	0	7	9	1	196
Shelton	28	12	2	2	48	15	1	108
Sherman	20	44	6	6	5	10	0	91
Simsbury	6	10	3	3	0	6	0	28
Somers	11	26	6	1	0	8	1	53
South Windsor	6	16	0	2	4	9	0	37
Southbury	24	42	4	6	29	39	1	145
Southington	26	25	2	2	23	23	1	102
Sprague	6	23	10	3	6	8	0	56
Stafford	37	105	37	15	14	15	1	224
Stamford	23	4	1	0	0	7	1	36
Sterling	14	85	18	8	8	6	1	140
Stonington	52	39	4	3	4	24	1	127
Stratford	9	9	0	0	0	3	0	21
Suffield	6	34	7	2	0	5	0	54
Thomaston	8	10	0	11	4	10	1	44

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Thompson	33	116	17	0	15	27	0	208
Tolland	38	38	19	3	6	38	0	142
Torrington	8	22	5	3	2	4	0	44
Trumbull	15	0	0	0	0	26	4	45
Union	28	69	21	1	0	6	0	125
Vernon	11	12	0	2	0	20	0	45
Voluntown	50	123	20	26	17	2	0	238
Wallingford	12	29	3	5	15	24	2	90
Warren	8	51	6	4	9	3	0	81
Washington	19	66	8	3	13	11	0	120
Waterbury	2	0	0	0	0	8	0	10
Waterford	91	93	8	9	2	49	2	254
Watertown	8	31	8	3	3	5	1	59
West Hartford	0	0	0	0	0	3	0	3
West Haven	0	0	0	0	0	0	0	0
Westbrook	7	19	2	1	0	3	0	32
Weston	53	40	1	3	0	1	0	98
Westport	17	0	0	0	0	10	0	27
Wethersfield	0	1	0	0	2	2	0	5
Willington	24	47	17	5	0	28	0	121
Wilton	121	37	2	21	4	22	0	207
Winchester	7	16	4	0	0	2	0	29
Windham	3	52	3	2	2	10	0	72
Windsor	4	9	3	1	0	5	1	23
Windsor Locks	1	0	0	0	0	0	0	1
Wolcott	6	4	0	1	0	8	0	19
Woodbridge	21	5	1	0	0	26	2	55
Woodbury	10	34	7	9	8	31	0	99
Woodstock	38	147	30	9	15	24	0	263
Totals	3,608	7,186	1,176	690	883	2,190	105	15,838

Appendix 2. Percent of yearling bucks harvested by antler point category, 1986-2008.

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
2007	475	4.0	43.2	12.2	21.5	8.4	6.1	2.3	1.3	0.5	0.5
2008	473	1.9	35.3	14.6	21.8	10.1	10.4	3.0	1.9	0.6	0.4
Average	523	1.2	43.4	14.0	21.1	8.3	8.1	2.0	1.6	0.2	0.1

* No data collected in 1998.

Appendix 3. Mean number of antler points of yearling males by deer management zone, 1999-2008.

	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
2007	3.4	3.5	3.5		3.1	3.1	2.9	4.1	3.5	4.0	3.6	2.7	3.7	2.3
2008	3.3	5.4	4.1		3.2	3.5	3.4	3.9	3.6	3.1	3.6	3.2	4.1	3.1

Appendix 4. Sex ratios (male:female) of deer harvested during Connecticut's regulated hunting seasons, 2006-2008.

Season	2006		2007		2008		3-year Average (2005-2007)		Males Per Female		
	Males	Females	Males	Females	Males	Females	Males	Females	2006	2007	2008
Archery											
State Land	257	242	248	206	257	210	238	215	1.1:1	1.2:1	1.2:1
Private Land	1,186	1,321	1,205	1,265	1,705	1,436	1,202	1,323	0.90:1	0.95:1	1.2:1
Subtotal	1,443	1,563	1,453	1,471	1,962	1,646	1,440	1,538	0.92:1	.99:1	1.2:1
Muzzleloader											
State Land	69	78	91	90	67	78	79	92	0.88:1	1.0:1	0.9:1
Private Land	298	252	320	224	225	320	286	277	1.2:1	1.4:1	0.7:1
Subtotal	367	330	411	314	292	398	365	369	1.1:1	1.3:1	0.7:1
Shotgun/Rifle											
State Land A	653	320	527	235	468	258	587	274	2.0:1	2.2:1	1.8:1
State Land B	111	72	112	86	114	103	140	99	1.5:1	1.3:1	1.1:1
Private Land	3,417	2,206	3,308	2,003	3,424	2,581	3,518	2,263	1.6:1	1.7:1	1.3:1
Subtotal	4,181	2,598	3,947	2,324	4,006	2,942	4,245	2,636	1.6:1	1.7:1	1.4:1
Landowner	567	392	576	410	686	490	613	453	1.5:1	1.4:1	1.4:1
Total	6,558	4,883	6,387	4,519	6,946	5,476	6,663	4,996	1.3:1	1.4:1	1.3:1

Appendix 5. Deer harvest on state Deer Lottery Hunting Areas (DLHA), 2008.

DLHA	Shotgun	Muzzleloader	Archery	Total
1	39	6	15	60
2	35	1	3	39
3	5	2	1	8
4	30	4	13	47
5	14	2	4	20
6	18	3	5	26
7	8	0	2	10
8	15	2	4	21
9	44	7	6	57
10	101	14	38	153
11	57	11	8	76
12	69	7	9	85
13	21	6	7	34
14	15	4	7	26
15	18	5	19	42
16	62	8	11	81
17	33	1	25	59
18	76	14	41	131
19	7	2	12	21
20	23	2	17	42
22	18	0	11	29
23	93	35	56	184
24	10	2	6	18
25	2	1	1	4
26	0	0	2	2
27	1	0	2	3
51	67	0	0	67
52	36	0	0	36
53	16	2	1	19
54	7	1	3	11
56	63	0	23	86
57	5	0	0	5
Total	1,008	142	352	1,502

Appendix 6. Archery harvest on state areas, 2008.

Shaded areas = areas open to bow hunting only

Name Of Area	Total	F	M
Aldo Leopold WMA	4	2	2
American Legion State Forest	4	1	3
Assekonk Swamp WMA	1	0	1
Babcock Pond WMA	4	2	2
Barn Island WMA	8	5	3
Bear Hill WMA	4	1	3
Beaver Brook State Park	2	1	1
Bennett's Pond SP	11	5	6
Bigelow Hollow State Park	2	1	1
Bishops Swamp WMA	3	1	2
Black Rock Lake	1	1	0
Bloomfield Flood Control Area	3	1	2
Camp Columbia State Forest	2	2	0
Centennial Watershed SF	23	12	11
Cockaponset State Forest	38	14	24
Collis P. Huntington State Park	6	3	3
Cromwell Meadows WMA	2	0	2
Eight Mile River WMA	1	0	1
Franklin Swamp WMA	7	3	4
Goshen WMA	1	1	0
Great Swamp Flood Control Area	5	1	4
Harkness/Verkades	7	5	2
Higganum Meadows WMA	2	2	0
Higganum Reservoir	1	0	1
Housatonic State Forest	15	8	7
Jim Spignesi WMA	2	0	2
John Minetto State Park	1	0	1
Kollar WMA	5	3	2
Lebanon Coop	1	0	1
Mad River Dam Flood Control Area	1	1	0
Mansfield Hollow Lake	5	4	1
Mansfield State Leased	1	1	0
Mattatuck State Forest	3	1	2
MDC Greenwoods	1	0	1
Meshomasic State Forest	8	6	2
Messerschmidt WMA	1	0	1
Mohegan State Forest	5	3	2
Mount Riga State Park	2	1	1
Nassahegon State Forest	2	1	1
Natchaug State Forest	41	16	25
Nathan Hale State Forest	6	3	3
Naugatuck State Forest	6	1	5
Nehantic State Forest	6	2	4
Nepaug State Forest	2	0	2
Nipmuck State Forest	25	13	12
Northfield Brook Lake	2	1	1
NU-Maromas Coop WMA	1	1	0
NU-Skiff Mtn. Coop WMA	3	2	1
Nye Holman State Forest	8	5	3
Pachaug State Forest	56	28	28

Paugnut State Forest	1	1	0
Paugussett State Forest	4	2	2
Peoples State Forest	2	0	2
Pomeroy State Park	2	1	1
Pootatuck State Forest	2	0	2
Quaddick State Forest	1	0	1
Quinebaug River WMA	1	1	0
Quinnipiac River State Park	7	3	4
Roraback WMA	12	4	8
Rose Hill WMA	2	1	1
Ross Pond State Park	3	2	1
Salmon River Cove & Haddam Neck	7	1	6
Salmon River State Forest	8	5	3
Scantic River State Park	6	3	3
Selden Island State Park	2	2	0
Sessions Woods WMA	1	0	1
Shenipsit State Forest	11	5	6
Simsbury WMA	1	0	1
Sucker Brook Flood Control Area	2	0	2
Sugarbrook Field Trial Area	1	0	1
Talbot WMA	8	4	4
Topsmead State Forest	2	2	0
Trout Brook Valley	2	2	0
Tunxis State Forest	7	2	5
West Thompson Dam	11	3	8
Wooster Mountain State Park	4	0	4
Wopowog WMA	1	1	0
Wyantnock State Forest	3	0	3
Zemko Pond WMA	2	0	2
Total	467	210	257

Appendix 7. Deer harvested using crop damage permits in Connecticut's deer management zones, 1996-2008.

Zone	Year												
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
1	213	133	126	160	159	121	103	106	98	82	64	58	59
2	4	13	9	20	16	7	10	16	24	18	18	17	17
3	42	32	76	52	60	59	44	61	109	105	71	49	76
4	72	45	52	34	43	41	40						
4A								17	9	25	14	21	21
4B								35	46	38	32	33	51
5	128	55	26	48	87	75	46	71	124	129	95	68	119
6	86	83	39	146	112	71	73	77	56	82	77	54	90
7	45	34	54	78	44	49	60	78	90	62	69	89	114
8	39	65	26	42	60	39	47	42	53	37	47	33	42
9	66	70	33	64	59	38	27	42	43	53	48	30	69
10	41	60	31	31	54	48	51	45	36	50	66	51	82
11	65	92	71	113	122	110	104	164	159	114	109	116	111
12	ND	66*	49	50	52	31	28	72	99	47	45	48	32
Total	801	748	592	838	868	689	633	826	946	842	755	667	883

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, 1996-2008.

Cause of Death	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Road	2,875	2,612	2,263	2,674	3,101	3,038	2,434	2,778	2,620	2,667	2,029	1,967	2,190
Dog	4	2	2	6	9	12	6	11	2	3	3	4	3
Unknown	140	173	200	179	175	190	140	217	183	183	117	162	72
Illegal	1	1	5	10	14	21	13	5	6	2	3	1	9
Crop damage	801	748	592	838	868	689	633	831	946	842	755	667	883
Total	3,821	3,536	3,062	3,707	4,167	3,950	3,226	3,842	3,757	3,697	2,907	2,801	3,157
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	1:3.9	1:4.0
% Mortality*	24.6	23.6	23.7	25.7	24.4	25.7	19.6	23.3	21.7	22.6	19.3	20.2	20.0
% of Harvest	31.7	29.7	30.2	33.6	31.3	33.1	26.9	30.3	27.7	29.2	29.2	25.3	24.9

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

Appendix 9. Frequency of deer roadkills in each of Connecticut's deer management zones, a 5-year comparison, 2004-2008.

Zone	Five-year					Total	Zonal % (sq. miles)	Roadkills/Sq. Mile			
	2004	2005	2006	2007	2008			2006	2007	2008	
1	91	119	64	86	92	452	3.9	344.1	0.19	0.25	0.27
2	75	97	58	63	80	373	3.3	409.85	0.14	0.15	0.20
3	238	230	207	173	216	1,064	9.3	272.1	0.76	0.64	0.79
4A	110	135	83	92	113	533	4.6	213.1	0.39	0.43	0.53
4B	137	196	128	137	166	764	6.7	120.0	1.07	1.14	1.38
5	270	330	240	220	245	1,305	11.4	444.9	0.54	0.49	0.55
6	127	106	93	111	119	556	4.8	259.1	0.36	0.43	0.46
7	285	261	202	180	269	1,197	10.4	370.9	0.54	0.49	0.73
8	53	54	35	32	26	200	1.7	167.6	0.21	0.19	0.16
9	265	282	199	211	199	1,156	10.1	277.8	0.72	0.76	0.72
10	122	117	93	82	89	503	4.4	243.6	0.38	0.34	0.37
11	519	448	433	384	341	2,125	18.5	290.76	1.49	1.32	1.17
12	328	292	191	196	235	1,242	10.8	356.4	0.54	0.55	0.66
Total	2,620	2,667	2,026	1,967	2,190	11,470	100	3,770.2	0.54*	0.52*	0.58*

*These numbers are averages, not totals.