# 2015 Connecticut Deer Program Summary



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### Introduction

This booklet is the 34<sup>th</sup> 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 2015, including changes in deer management regulations and reporting requirements, 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 stabilizing or reducing deer population growth 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 overabundant deer populations, aggressive management strategies have been 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), development of an earn-a-buck program (2005), increased bag limits in specific deer management zones (2009), allowing the use of crossbows during January (2010), allowing the use of crossbows statewide (2013), and allowing the harvesting of deer on Sundays during the archery season (2015).

In 1995, the replacement antlerless tag program was initiated, allowing hunters in deer management zones (DMZs) 11 and 12 to harvest additional antlerless deer, with the goal of increasing the doe harvest. In 2003, hunting over bait was permitted in DMZs 11 and 12 during all seasons on private land. The use of bait in areas where hunter access to private land is limited increases 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 2009, hunters were issued 1 additional antlerless tag in DMZ 7 and an additional 2 antlerless tags in DMZ 11 and DMZ 12 with their shotgun/rifle and muzzleloader permits. In 2010, hunters were allowed to use crossbows in January in DMZ 11 and 12. In 2013, use of crossbows was expanded to allow use during the entire archery season on state and private land in all DMZs. In October 2015, archery hunters were allowed to hunt on Sundays on private land in DMZs where deer were considered overpopulated, which included all DMZs except 2, 3, and 4A. In developed areas where firearms hunting is not feasible, DEEP encourages the use 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 sharp-shooting programs.

In recent years, town governments have been taking a more active role in initiating local deer management programs. In 2004, representatives of 10 towns in Fairfield County formed a Regional Deer Management Working Group called the Fairfield County Municipal Deer Management Alliance (<a href="www.deeralliance.com">www.deeralliance.com</a>). Currently, 19 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.

Residents of the towns of Redding and Newtown developed websites for each town (<a href="http://BeSafeRedding.org">http://BeSafeRedding.org</a> and <a href="http://BeSafeNewtown.org">http://BeSafeNewtown.org</a>) to facilitate a process where willing landowners are matched up with hunters that are committed to removing deer from private land at no cost to the landowner. The mission is to get 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.

A 4-year deer research project assessing fawn production, adult and juvenile survival rates, causes of mortality, and habitat use in Connecticut DMZ 1 was completed in spring 2015. Results of the study are being summarized and should be available in 2017. A project evaluating accuracy of various population estimation techniques will begin in fall 2016.

The Division will be collecting deer heads to test for chronic wasting disease (CWD) during the 2016 hunting season. Anyone interested in donating deer heads from harvested deer should contact William Embacher (<u>william.embacher@ct.gov</u>) or Andrew LaBonte (<u>andrew.labonte@ct.gov</u>) at 860-418-5989 or 860-418-5921 for more information.

# **Hunter Notes**

In 2015, the Connecticut General Assembly approved Public Act 15-204, An Act Authorizing Bow and Arrow Hunting on Certain Private Property on Sundays. This new law authorized DEEP to establish a season for Sunday bowhunting on private properties during the archery season in areas of the state with an overpopulation of deer. The law also requires that all such hunting must take place at least 40 yards away from blazed hiking trails. As with all deer or turkey hunting on private lands, hunters must have written permission from the landowner. Sunday hunting went into effect on October 1, 2015. Check the DEEP website (www.ct.gov/deep/hunting) for additional information.

The crop damage permit application and harvest reporting process was also streamlined in 2015 and placed online to follow the current licensing and harvest reporting requirements used during the regulated deer hunting season.

Information on dates and locations of hunter education courses can be obtained by calling the DEEP Wildlife Division at 860-424-3011, or on the DEEP website (<a href="www.ct.gov/deep/hunting">www.ct.gov/deep/hunting</a>). Licenses and permits to fish, hunt, and trap in Connecticut can be purchased on-line by going to Connecticut's Online Sportsmen Licensing System at <a href="www.ct.gov/deep/sportsmenlicensing">www.ct.gov/deep/sportsmenlicensing</a>.

Regulations remain in place 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. Specific wording of the regulation (<a href="https://www.ct.gov/deep/lib/deep/regulations/26/26-55-4.pdf">www.ct.gov/deep/lib/deep/regulations/26/26-55-4.pdf</a>) and an updated list of states where CWD has been documented can be found on the DEEP website at <a href="https://www.ct.gov/deep/hunting">www.ct.gov/deep/hunting</a>.

# **Regulated Deer Harvest**

Regulated hunting is an effective and cost-efficient method for maintaining deer populations at acceptable densities. With the implementation of a new system for reporting harvested deer in 2009, caution should be exercised when comparing harvest data collected before 2009 to harvest data collected thereafter. During the 2015 hunting season, 9,113 deer were legally harvested and reported (Table 1; Figure 1). This represents a 20% decrease from the 2014 harvest. Harvest by crossbow hunters comprised 47%, 62%, and 41% of the January harvest in 2014, 2015, and 2016. Although the statewide harvest fluctuates annually, harvest levels have been declining over the past couple years.

In 2015, 1,620 deer were harvested during the first 4 days of the shotgun/rifle season, a 24% decrease from 2014 (2,129). Using the telephone and on-line reporting systems, the reported shotgun/rifle harvest was 3,373 deer in 2015, a 17.8% decrease from 2014 (4,104). In 2015, the landowner harvest was 702, a decrease from 2014 (1,087). Typically, unlike the 3-week shotgun/rifle season, the landowner season runs from November to December and is less affected by periods of inclement weather and snowfall. The decline in landowner harvest is likely due to a decrease in permit sales (7.1%) and high acorn abundance.

The antlerless and either-sex replacement tag harvest was lower in 2015 (316) than in 2014 (455). Deer harvested under the replacement antlerless and either-sex tag program (316) contributed to 15.0% of the total deer harvest on private land in DMZs 11 and 12. Archery and shotgun/rifle seasons accounted for 50.1% and 37% of all deer taken in 2015, which is the third consecutive year the archery harvest has exceeded the shotgun/rifle harvest. Landowners and muzzleloader hunters accounted for 7.7% and 5.2% of all deer taken in 2015. Harvest varied considerably by season and town (Appendix 1). The overall decline in the 2015 deer harvest is attributed to a decrease in permit issuance (4.4%), and the high abundance of acorns and unusually warm weather conditions, both of which reduce deer movements.

A Junior Deer Hunter Training Day was established in 2003 for youth hunters. This training period was increased to two days in 2009, and then expanded to a full week in 2014. Youth hunters continue to take advantage of these special training days. The 3-year average harvest for Junior Deer Hunter Training Days is 87 deer.

#### **Permit Allocation**

To reduce Connecticut's deer population growth rate, the Wildlife Division provides opportunities for hunters to purchase multiple deer permits. Permit issuance increased consistently from 1975 to 1992, and remained relatively stable from 1992-2009 (Figure 1). Since the implementation of the online license system and an increase in fees, permit issuance declined (2009-2011) 9% from the previous 3-year average (2006-2008) of 61,859. Deer permit issuance in 2014 declined nearly 1,000 permits from 2013, and declined another 2,327 permits in 2015 (Table 2). Permit issuance in 2015 was similar to issuance in 1988. Issuance for private land muzzleloader permits had the greatest 1-year decline (15.3%), followed by state land B permits (9.3%). Archery permit issuance continued to increase (2.2%) to an all-time high of 16,975 in 2015. Overall, shotgun/rifle hunters purchased the largest percentage of permits (39.9%), followed by archery hunters (33.6%), muzzleloader hunters (19.0%), and landowners (7.6%). Sixty-eight percent of firearms deer permits were issued for use on private land and the remaining 32% were issued for state-managed lands. During the sixth year of authorizing the use of revolvers for deer hunting, 820 hunters took advantage of this opportunity, a 5.9% increase in issuance from 2014 (774).

Table 1. Deer harvested during Connecticut's regulated hunting seasons, 2014-2015.

			3-year			% Change
Season	Harvest 2014	Harvest 2015	Average Harvest (2012-2014)	% of Total 2015	% Change from 2014 to 2015	3-year Average to 2015
Archery			(= = = = = = = = = = = = = = = = = = =			
State Land	626	567	663	6.2%	-9.4%	-14.5%
Private Land	4,547	3,843	4,790	42.2%	-15.5%	-19.8%
Replacement Antlerless <sup>A, B</sup>	233	158	242	1.7%	-32.2%	-34.6%
Either-sex Tag <sup>A, B</sup>	106	75	106	0.8%	-29.2%	-29.0%
January <sup>E</sup>	260	156	274	1.7%	-40.0%	-43.1%
Replacement Antlerless <sup>A, B</sup>	26	5	29	0.1%	-80.8%	-82.8%
Either-sex Tag <sup>A, B</sup>	1	0	2	0.0%	-100.0%	-100.0%
$Crossbow^B$	160	64	137	0.7%	-60.0%	-53.2%
Subtotal	5,433	4,566	5,631	50.1%	-16.0%	-18.9%
Muzzleloader						
State Land	103	79	114	0.9%	-23.3%	-30.9%
Private Land	667	393	777	4.3%	-41.1%	-49.4%
Replacement Antlerless <sup>A, C</sup>	19	1	14	0.0%	-94.7%	-93.0%
Either-sex Tag <sup>A, C</sup>	4	6	9	0.1%	50.0%	-30.8%
Subtotal	770	472	892	5.2%	-38.7%	-47.1%
Shotgun/Rifle						
State Land A	567	509	657	5.6%	-10.2%	-22.5%
State Land B	76	49	87	0.5%	-35.5%	-43.5%
Private Land	3,461	2,815	3,999	30.9%	-18.7%	-29.6%
Replacement Antlerless <sup>A, D</sup>	19	20	28	0.2%	5.3%	-27.7%
Either-sex TagA, D	47	51	61	0.6%	8.5%	-16.8%
Revolver <sup>D</sup>	1	7	7	0.1%	600.0%	-4.5%
Muzzleloader <sup>D</sup>	26	26	24	0.3%	0.0%	8.3%
Subtotal	4,104	3,373	4,742	37.0%	-17.8%	-28.9%
Youth Hunting Days <sup>D</sup>	53	59	87	0.6%	11.3%	-31.9%
Landowner	1,087	702	1190	7.7%	-35.4%	-41.0%
Total	11,394	9,113	12,455	100.0%	-20.0%	-26.8%

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

B Included as part of private land archery total.

C Included as part of private land muzzleloader total.

D Included as part of private land shotgun/rifle total.

E Refers to the January following harvest year listed.

Figure 1. Total deer permit issuance and total deer harvest in Connecticut, 1975-2015.

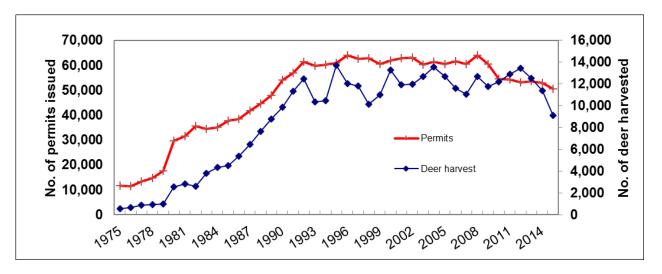


Table 2. Deer hunting permits issued in Connecticut for all regulated hunting seasons, 2013-2015.

Season	Permits 2013	Permits 2014	Permits 2015	3-Year Average Permits 2012-2014	% of Total 2015	% Change 2014 to 2015	% Change 3-year Avg. to 2015
Archery	15,626	16,603	16,975	15,493	33.6%	2.2%	9.6%
Muzzleloader							
State Land	3,387	3,339	3,139	3,482	6.2%	-6.0%	-9.8%
Private Land	7,743	7,614	6,447	7,811	12.8%	-15.3%	-17.5%
Subtotal	11,130	10,953	9,586	11,293	19.0%	-12.5%	-15.1%
Shotgun/Rifle							
State Land A*	5,484	5,069	4,755	5,193	9.4%	-6.2%	-8.4%
State Land B*	1,860	1,781	1,615	2,023	3.2%	-9.3%	-20.2%
Private Land	15,033	14,321	13,760	14,860	27.2%	-3.9%	-7.4%
Subtotal	22,377	21,171	20,130	22,103	39.9%	-4.9%	-8.9%
$\mathbf{Revolver}^{\mathrm{A}}$	891	774	820	870	1.6%	5.9%	-5.7%
Landowner	4,416	4,109	3,818	4,304	7.6%	-7.1%	-11.3%
Total	53,549	52,836	50,509	53,552	100.0%	-4.4%	-5.7%

<sup>\*</sup> 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. Bowhunter success rates fluctuated between 24.3% and 27.6% from 2004 to 2008. Bowhunter success has exceeded 35% since 2010 (35.2% in 2010; 38.0% in 2011; 37.7% in 2012; 38.3% in 2013; and 35.7% in 2014), except for this past hunting season (26.9% in 2015). Success rates in 2015 decreased slightly for the shotgun/rifle hunting season compared to the 3-year average. In 2015, archery hunters had the highest annual success rate (26.9%), followed by private land shotgun/rifle hunters (20.5%) and landowners (18.4%). Success rate for the combined muzzleloader seasons was 4.9%. Lower success rates are expected because the muzzleloader season occurs after the shotgun/rifle deer hunting seasons.

<sup>&</sup>lt;sup>A</sup> Not included in total permits.

Table 3. Deer hunter success rates (%) in Connecticut, 2014-2015.

			3-year Avg. Success Rate	Difference from	Difference from 3-year
Season	2014	2015	(2012-2014)	2014	Avg.
Archery					
$Combined^A$	35.7%	26.9%	37.2%	-8.8%	-10.3%
Muzzleloader					
State Land	3.2%	2.5%	3.3%	-0.7%	-0.8%
Private Land	9.3%	6.1%	10.1%	-3.2%	-4.0%
Combined	7.4%	4.9%	8.0%	-2.5%	-3.1%
Shotgun/Rifle					
State Land A	11.1%	10.7%	12.6%	-0.4%	-1.9%
State Land B	4.4%	3.0%	4.3%	-1.4%	-1.3%
Private Land	26.5%	20.5%	27.5%	-6.0%	-7.0%
Combined	20.6%	16.8%	21.7%	-3.8%	-5.0%
Landowner	26.8%	18.4%	27.8%	-8.4%	-9.4%
Average <sup>B</sup>	23.0%	18.0%	23.6%	-4.9%	-5.6%

A Data available only for state and private land combined.

# **Archery Statistics**

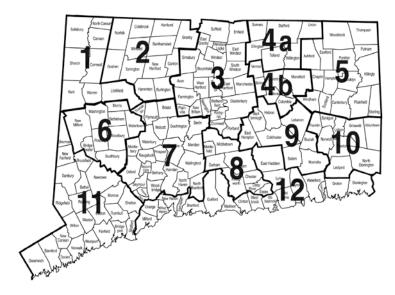
Excluding the landowner season, just over half (54%) of the deer taken during the hunting seasons were harvested by bowhunters. For the past five years (2011, 2012, 2013, 2014, 2015), record bow harvests have been recorded (5,211; 5,413; 6,046; 5,433; 4,566 respectively). For the third consecutive year, the bow harvest (4,566) exceeded the shotgun/rifle harvest (3,373). Seventy-four percent (3,376 – 2,887 private, 489 state) of the total archery harvest was taken during the early archery season (September 15 to November 17); 16% (715 – 664 private, 51 state) was taken during the 3-week shotgun/rifle season (open in all zones on private land and state land bowhunting-only areas); 7% (319 – 292 private, 27 state) was taken during the muzzleloader season (December 9 to December 31); and 3% (156) was taken during the January season open in DMZs 11 and 12 on private land only (January 1-31, 2016). During the 2015 archery season, hunters were allowed to hunt on Sundays on private land. The Sunday harvest comprised 11% of the entire archery harvest and 21% during the January season. Comparing the percent of archery deer harvested on weekends from 2014 (29%; Saturday) to 2015 (37%; Saturday and Sunday), there was about an 8% increase in harvest on weekends during the regular season and about a 3% increase during the January season (2014, 35%; 2015, 38%) when archery hunting was opened up on Sundays in select zones (all DMZs except 1, 3, and 4A). To obtain additional information beneficial to zonal deer management, archery hunters were asked how many hours they hunted and how many fawns, does, and bucks they observed on the day they harvested their deer. According to information reported by hunters in response to the questions, the average number of deer observed per hour (Sept.-Dec.) in 2015 was 0.89, which was lower than 2013 and 2014 (1.1). Number of fawns per doe in 2015 (0.73) was higher than in 2014 (0.49), while number of bucks per doe in 2015 (0.22) was slightly lower compared to 2014 (0.36). Fawns per doe and bucks per doe ratios in 2015 were impacted by issues with the harvest reporting system eliminating some observational data.

# **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.

<sup>&</sup>lt;sup>B</sup> Average is based on total number of deer harvested/total number of permits issued.

Figure 2. Connecticut's Deer Management Zones, 2015.

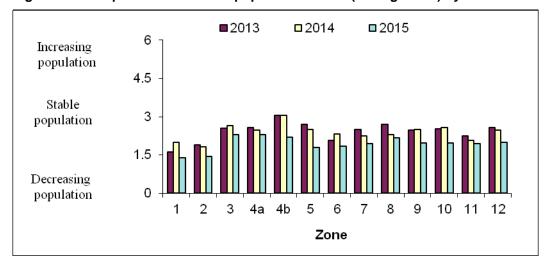


#### **Hunter Perceptions of Population Trends**

In 2015, 11,996 deer hunters were sent an email and asked to complete an online hunter survey. A total of 4,938 hunters responded for a 41% response rate. Similar to hunter surveys from previous years, the survey included 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). Fifty-six percent of the hunters who responded to the survey believed that the population was declining, 34% believed it was stable, and 10% believed it was increasing. DMZs 3 and 4A had the highest average rank (2.3) (Figure 3). In general, hunters perceived that populations are relatively stable or have been decreasing slightly in most zones over the past 3 years.

Based on the survey, observations and distribution of predators increased in 2015 compared to 2014. Hunters reported 2,411 bear sightings in 121 towns in 2015 at a rate of one bear sighting per 30 days spent afield (897 bear sightings in 95 towns in 2014, at a rate of one bear sighting per 63 days spent afield). Hunters reported 3,568 bobcat sightings in 157 towns in 2015 at a rate of one bobcat sighting per 21 days spent afield (1,794 bobcat sightings in 158 towns in 2014, at a rate of one bobcat sighting per 31 days spent afield). Hunters reported 16,263 coyote sightings in 165 towns in 2015 at a rate of one coyote per 4.5 days spent afield (8,713 coyote sightings in 167 towns in 2014 at a rate of one coyote per 6.5 days spent afield).

Figure 3. Perception of zonal deer population trends (average rank) by Connecticut's deer hunters, 2013-2015.



#### **Zonal Deer Management**

Because deer populations vary across the state, Deer Management Zones (DMZ) were established. Management strategies in each zone may vary depending on population status. In DMZ 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 DMZ 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 DMZ 4. In 2003, DMZ 4 was split into two zones (4A and 4B), allowing each zone to maintain different management objectives. In DMZ 4A (northern portion), the restriction on the use of antlerless tags was retained, while the use of antlerless tags was again allowed in DMZ 4B (southern portion) (Figure 4).

Free replacement antlerless tags and either-sex tags (bonus buck tags) were available in DMZs 11 and 12 during the private land archery, shotgun/rifle, and muzzleloader seasons in 2015. 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.

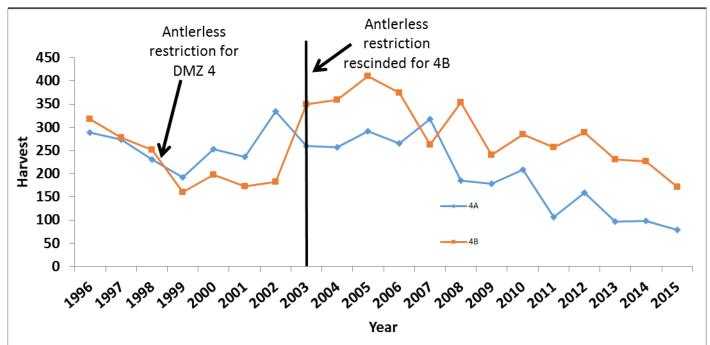


Figure 4. Private land shotgun/rifle deer harvest in Deer Management Zones 4A and 4B, 1996-2015.

# 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 DMZ. However, without information on hunter distribution and effort by zones, the potential usefulness of these data is limited. To gain insight into hunter distribution and success rates by zone, deer hunters were asked on the hunter survey, "In what zone do you do most of your shotgun/rifle hunting?" The percent of hunters in each DMZ was multiplied by total number of deer permits issued in 2015 to estimate total number of hunters by zone. Total number of hunters and total private land shotgun/rifle 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 13 management zones, most firearms hunting (40%) occurred in four zones (5, 9, 11, and 12). Highest private land deer harvests were reported for DMZs 1, 5, 9, and 12. Zone 4B had the highest deer harvest per square mile (1.4) and DMZ 4B had the greatest density of hunters (5.1 per square mile). Hunter success rate was highest in zone 4B (28%), likely due to several years of an antlerless tag restriction, while success in zones 2 and 4A were the lowest (15% and 10%). The 3-year trend in hunter success rates by zone has fluctuated over the past 3 years (Table 5). Although a substantial decline this past year due to the abundance of acorns, four DMZs (4B, 5, 9, and 10) have continued to produce relatively high hunter success rates over the past 3 years (Table 5).

#### **Archery Season Success**

Based on the number of deer harvested and reported by bowhunters, 1 of 3 (32%) hunters harvested 2 or more deer during the regular archery season. Bowhunter success rates were highest in zones 1, 4B, 5, 6, 10, and 11. In zone 4A, the restriction on the use of antlerless tags during the firearms seasons allowed for the population to increase between 1999 and 2003. In 2003, the zone was split into 4A and 4B, and the antlerless restriction was rescinded in 4B, likely resulting in higher success rates. In zones 11 and 12, 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 more than 2 times higher than all other zones.

Table 4. Zonal hunter numbers, harvest, and success rates for private land during the 2015 shotgun/rifle hunting season.

	Zone	% of	Estimated			_		
	Hunted	Hunters	# of Private			Deer		<b>%</b>
	Private Land <sup>A</sup>	Answered	Land Shotgun/		Area	Harvest/	Hunters/	Success
Zone	Shotgun/Rifle	Question <sup>A</sup>	Rifle Hunters	Harvest	(sq. miles)	Sq. Mile	Sq. Mile	Rate
1	157	7.41%	1,020	263	344.59	0.8	3.0	26%
2	158	7.46%	1,026	156	410.69	0.4	2.5	15%
3	138	6.52%	897	189	273.33	0.7	3.3	21%
<b>4A</b>	122	5.76%	793	79	213.5	0.4	3.7	10%
<b>4B</b>	95	4.49%	617	171	120.66	1.4	5.1	28%
5	304	14.35%	1,975	449	445.94	1.0	4.4	23%
6	149	7.03%	968	198	260.03	0.8	3.7	20%
7	164	7.74%	1,065	210	373.08	0.6	2.9	20%
8	121	5.71%	786	133	169.11	0.8	4.6	17%
9	201	9.49%	1,306	275	279.39	1.0	4.7	21%
10	157	7.41%	1,020	237	244.36	1.0	4.2	23%
11	165	7.79%	1,072	195	291.53	0.7	3.7	18%
12	187	8.83%	1,215	260	358.39	0.7	3.4	21%
Total	2,118	100%	13,760	2,815	3,785	0.7	3.6	20%

A Based on hunter survey question asking hunters which zone they primarily hunt in.

Table 5. Zonal comparisons in private land shotgun/rifle harvest, hunter distributions, and success rates, 2013-2015.

-	Area	Deer	Harvest/Sq	. Mile	Hun	ters/Sq.	Mile	Hunte	r Success Ra	ite (%)
Zone	(sq. miles)	2013	2014	2015	2013	2014	2015	2013	2014	2015
1	344.6	0.8	0.7	0.8	4.2	2.6	3.0	19	28	26%
2	410.7	0.4	0.4	0.4	3.3	2.4	2.5	13	15	15%
3	273.3	0.7	0.8	0.7	2.9	3.2	3.3	23	26	21%
<b>4A</b>	213.5	0.4	0.5	0.4	4.5	3.1	3.7	10	15	10%
<b>4B</b>	120.7	1.9	1.9	1.4	4.7	4.8	5.1	41	39	28%
5	445.9	1.6	1.5	1.0	4.4	4.3	4.4	37	34	23%
6	260.0	0.9	0.9	0.8	3.4	3.6	3.7	28	24	20%
7	373.1	0.5	0.6	0.6	2.6	2.6	2.9	21	21	20%
8	169.1	1.1	1.0	0.8	5.6	4.6	4.6	20	22	17%
9	279.4	1.3	1.2	1.0	5.0	4.0	4.7	26	31	21%
10	244.4	1.2	1.3	1.0	4.2	3.7	4.2	29	36	23%
11	291.5	1.0	0.8	0.7	5.6	4.1	3.7	18	20	18%
12	358.4	1.0	1.0	0.7	3.6	3.3	3.4	28	29	21%
Total	3,785.0	1.0	0.9	0.7	4.0	3.4	3.6	24	27	20%

Table 6. Zonal comparisons of archery season success rates, 2015.

Zones	Zone Hunted Archery <sup>A</sup>	% of Hunters Answered Question <sup>A</sup>	Estimated # of Archery Hunters	Harvest	Hunter Success Rate %
1	83	3.9%	676	193	28.6
2	128	6.1%	984	136	13.8
3	128	6.1%	1,185	249	21.0
<b>4A</b>	98	4.6%	842	193	22.9
<b>4B</b>	88	4.2%	658	198	30.1
5	210	9.9%	1,743	459	26.3
6	120	5.7%	889	207	23.3
7	246	11.6%	1,897	532	28.0
8	112	5.3%	901	241	26.8
9	148	7.0%	1,245	247	19.8
10	81	3.8%	717	218	30.4
11	426	20.2%	3,325	1,045	31.4
12	244	11.6%	1,914	492	25.7
Total	2,112	100.0%	16,975	4,410	26.0

A Based on hunter survey question asking hunters which zone they primarily archery 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 since 1993 from hunter surveys on abundance of the fall acorn crop. Hunter perceptions of the fall acorn crop were ranked on a scale from 0 (scarce) to 6 (abundant acorns). In 2015, 5.3% of the hunters who responded to the survey ranked the fall acorn crop as scarce, 21.8% as moderate, and 72.8% as abundant. DMZs 5,6,8,9, and 12 had the highest average rank (5.2), while DMZs 1 and 2 had the lowest average ranks (4.8 and 4.6) (Figure 5). On a scale of 0-6, the average rank statewide was 5.1.

The past 20 years of data on acorn abundance and deer harvest rates suggest that a correlation exists between hunter success and acorn abundance (Figure 6). In 1993, when acorns were abundant, hunter success was one of the lowest recorded, and in 2004, when acorns were scarce, the hunter success rate was the highest. During years with low acorn productivity, deer travel more to access other food sources, such as green fields, increasing their vulnerability to hunters. In 2013 and 2014, the acorn-success pattern was inconsistent and may have been influenced by warm weather during the hunting season. During the 2015 season, the abundance of acorns and warm weather resulted in low hunter success rates. On average, the acorn crop statewide has been moderate most years, scarce about every 5-6 years, and abundant every 3 years.

Figure 5. Perception of acorn crops (average rank) by Connecticut's deer hunters, 2012-2015.

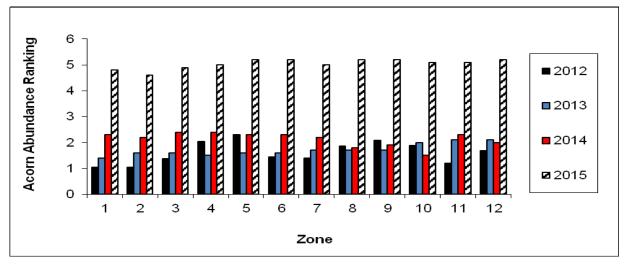
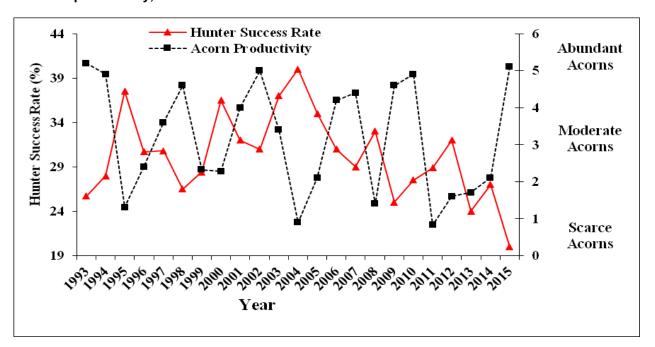


Figure 6. Relationship between private land shotgun/rifle hunter success rates and fall acorn productivity, 1993-2015.



### **Private Land Deer Harvest**

The 2015 private land deer harvest was highest for DMZs 5, 11, and 12 (Table 7). Zonal harvest levels have fluctuated in most zones over the past 11 years and likely reflect differences in weather conditions, snow cover, acorn abundance, and deer densities (Table 7). Highest total deer harvest over the last 11 years has been observed in DMZ 11, likely a result of deer abundance, availability of replacement deer tags, use of bait, and increased access to land for hunting. Total private land deer harvest decreased 16.9% from 2014 to 2015.

Table 7. Private land deer harvest for all seasons (excluding landowner) in each of Connecticut's Deer Management Zones, 2005-2015.

						Year					
Zone	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	811	639	680	710	719	703	721	728	558	521	472
2	369	357	323	385	394	320	374	395	356	296	273
3	413	362	338	397	442	481	487	529	491	536	426
<b>4A</b>	273	218	259	293	267	293	276	348	320	275	228
4B	476	467	329	471	434	445	470	547	486	496	357
5	1,607	1,348	1,165	1,488	1,218	1,232	1,400	1,375	1,345	1,163	902
6	544	511	458	489	524	556	500	584	557	490	416
7	473	454	438	584	685	772	797	771	765	747	743
8	467	398	330	360	343	374	473	549	489	398	342
9	817	757	628	693	612	624	718	721	721	685	511
10	567	504	504	640	486	576	632	662	533	546	433
11	1,799	1,898	1,846	2,179	2,088	1,997	2,022	1,923	1,921	1,505	1,321
12	1,080	976	1,030	1,040	872	954	1,324	1,370	1,251	1,017	781
Total	9,613	8,832	8,328	9,955	9,084	9,327	10,194	10,502	10,748	8,675	7,205
% Change	-8.3%	-8.1%	-5.7%	19.5%	-8.7%	2.7%	9.2%	3.0%	2.3%	-19.3%	-16.9%

# Harvest Effort, Observations, and Fawn Recruitment

Hunter observations provide good trend indices into zonal population changes. Observation rates were measured based on number of deer observed per hour of hunting. Fawn recruitment (number of fawns added to fall population) also is an important variable used to understand changes in population growth and deer herd dynamics. Fawn recruitment was measured as number of fawns observed per doe. The most representative samples of fawn to doe ratios are those collected at the start of the hunting season, when fawns are easily identifiable and hunter harvest would have the least impact on observations. Another means of assessing zonal population changes is looking at the number of deer harvested per hour hunted. Observation rates of bucks, does, and fawns were similar between years, as was the percent of each class harvested between years (Table 8). Fawns were harvested at a lower rate than they were observed, compared to bucks which were harvested at a greater rate than they were observed (Table 8). Number of deer observed per hour, number of fawns observed per doe, and number of deer harvested per hour varied across years and by zone (Table 9).

Table 8. Hunter observations and harvest ratios reported during the first month of the archery season in Connecticut, 2012-2015.

		First month of Archery (Sept. 15-Oct. 15)										
Age-	Observation % Harvest %											
sex												
	2012	2013	2014	2015A	2012	2013	2014	2015				
Bucks	23%	25%	27%	11%	37%	37%	32%	32%				
Does	49%	55%	54%	51%	48%	50%	54%	55%				
Fawns	27%	25%	19%	38%	14%	13%	14%	13%				

A Caution should be used when evaluating 2015 results and comparisons, as technical issues with the harvest reporting system may have eliminated some observational data.

Table 9. Observation rates (deer seen/hour (D/hr)), number of fawns per doe (F:D), and number of deer harvested per hour (H/hr) collected at the time harvest was summarized for the first month of the archery season by Deer Management Zone (DMZ) in Connecticut, 2013-2015.

		Deer Harvested and Observed/Hour													
		Reported on Day of Harvest													
DMZ		First Month of Archery (Sept. 15-Oct. 15)													
		2	013			20	014			20	15 <sup>4</sup>		$\Delta^3$	$\Delta^3$	$\Delta^3$
	n	D/hr <sup>1</sup>	F:D	H/hr <sup>2</sup>	n	D/hr <sup>1</sup>	F:D	H/hr²	n	D/hr <sup>1</sup>	F:D	H/hr²	D/hr <sup>1</sup>	F:D	H/hr
1	88	1.01	0.43	0.34	61	1.34	0.60	0.34	23	1.66	0.49	0.31	0.32	-0.11	-0.03
2	54	0.95	0.23	0.35	42	0.81	0.37	0.39	11	1.14	0.76	0.38	0.33	0.39	-0.01
3	116	1.06	0.42	0.35	85	0.96	0.60	0.34	27	1.84	0.78	0.31	0.88	0.18	-0.03
4A	99	0.90	0.55	0.35	85	1.01	0.40	0.36	17	1.38	0.76	0.32	0.37	0.36	-0.04
4B	96	1.16	0.69	0.34	82	1.16	0.52	0.32	46	2.00	0.74	0.40	0.84	0.22	0.08
5	235	1.07	0.57	0.31	201	1.03	0.55	0.34	81	1.41	0.93	0.29	0.38	0.38	-0.05
6	80	1.07	0.36	0.30	76	1.11	0.47	0.35	30	1.81	0.81	0.35	0.70	0.34	-0.00
7	197	1.08	0.41	0.33	131	0.97	0.42	0.36	72	1.92	0.86	0.37	0.95	0.44	0.01
8	87	1.12	0.42	0.32	90	1.10	0.56	0.32	30	1.87	0.68	0.38	0.77	0.12	0.06
9	126	1.09	0.48	0.31	117	1.09	0.39	0.31	29	1.56	0.70	0.33	0.47	0.31	0.02
10	89	1.22	0.48	0.33	84	1.09	0.40	0.35	21	1.58	0.55	0.30	0.49	0.15	-0.05
11	533	1.23	0.51	0.31	369	1.47	0.54	0.35	172	2.03	0.76	0.36	0.56	0.22	0.01
12	227	1.33	0.41	0.34	227	1.30	0.56	0.35	89	1.97	0.70	0.34	0.67	0.14	-0.01

<sup>&</sup>lt;sup>1</sup> Deer observed per hour hunted based on successful hunters.

<sup>&</sup>lt;sup>2</sup> Deer harvested per hour hunted based on successful hunters.

<sup>&</sup>lt;sup>3</sup> Change from 2014 to 2015.

<sup>&</sup>lt;sup>4</sup> Caution should be used when evaluating 2015 results and comparisons, as technical issues with the harvest reporting system may have eliminated some observational data.

### **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. In 2009, this was increased to 1 either-sex and 2 antlerless deer for hunters in DMZ 7 and 1 either-sex and 3 antlerless deer for hunters in DMZs 11 and 12. Although button bucks are included in the antlerless harvest, this system promotes the removal of female deer (Table 10). In zone 4A, the antlerless-only tag was NOT valid, reducing the bag limit to 1 deer per hunter during the private land firearms season. Overall, deer harvest sex ratios have been similar over the past 3 years (1.2 males per female) (Table 11). Based on observations reported online at the time of harvest, a bias (proportion observed vs. proportion harvested) towards harvest of bucks occurs as the season progresses (Table 8). Selectivity towards fawns remains the same (Table 8). In 2015, 55% (4,947) of the total regulated deer harvest (excluding crop damage harvest) was comprised of antlerless deer. A significant proportion of the harvest included adult females, which contributes to population control efforts (Appendix 2).

Table 10. Sex ratios (male:female) and antlered to antlerless ratios of deer harvested in 2015.

	Muzzleloader	Shotgun/Rifle	Archery	Landowner	Crop Damage	Total
Male:Female	0.72:1	1.41:1	1.07:1	1.80:1	0.81:1	1.16:1
<b>Antlered:Antlerless</b>	0.48:1	1.04:1	0.82:1	1.35:1	0.56:1	0.85:1

Table 11. Sex ratios (male:female) of deer harvested during Connecticut's regulated hunting seasons, 2013-2015.

2	2014	2	2015	Mal	es per Fen	nale	3-year Average
Males	Females	Males	Females	2013	2014	2015	(2013-2015)
5,879	5,429	5,153	4,368	1.2:1	1.1:1	1.2:1	1.2:1

# **Antler Points and Yearling Fraction**

Deer age, nutritional status, and genetics affect the number of antler points on bucks. The yearling fraction of the antlered buck harvest is a common measure of hunting pressure. Intensively hunted herds have yearling fractions of about 70%, while lightly hunted herds have fractions of about 30%. Few yearlings (less than 6%) have 7 or more points and few adults (less than 12%) have less than 5 points, based on the known aged samples in Connecticut. Using antlered bucks with less than 5 points (yearling) and those with 7 or more points (adults) is one way of estimating the yearling fraction of the antlered buck harvest. The statewide yearling/male fraction based on antler points during the shotgun/rifle season was 40% in 2012, 44% in 2013, 45% in 2014, and 42% in 2015. Of all antlered bucks harvested, 8-pointers were the most frequent point category (Figure 7). The number of points on antlered bucks has remained relatively consistent over the past 4 years (Figure 7).

# **Replacement Tags**

The replacement tag system was developed to increase the harvest of female deer. This system is currently in place in DMZs 11 and 12. Since 1998, when archery hunters first had access to replacement tags in DMZ 11, the buck harvest remained relatively stable, while the antlerless harvest in that zone has increased nearly 5 times (from 200 to almost 1,000 deer annually). The buck harvest has increased in recent years with the addition of earn-a-buck in 2005. The number of roadkills in DMZ 11 has shown a steady decline since 1998 (Figure 8). The ratio of female deer harvested in DMZ 11 increased from 0.9 females per male (1994-1997) to 1.3 females per male (2001-2009), and now is close to 1:1 (Figure 9).

Figure 7. Number of antler points on bucks collected by the telecheck/online reporting system during the shotgun/rifle hunting season in Connecticut, 2012-2015.

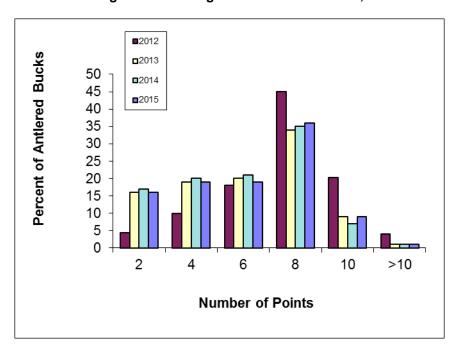


Figure 8. Comparison of trends in roadkills and the antlered and antlerless deer harvests during the archery deer season in Deer Management Zone 11, 1995-2015.

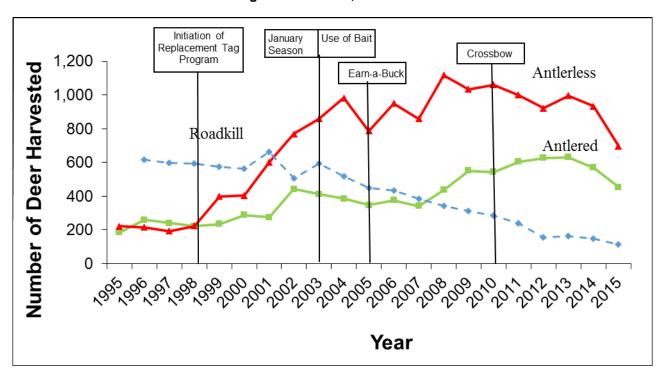
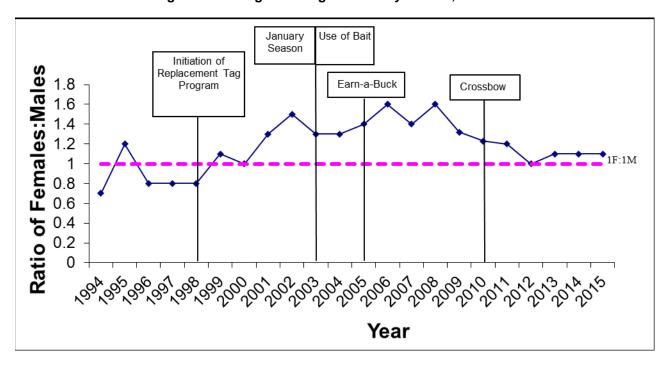


Figure 9. Changes in the sex ratios of harvested deer from Deer Management Zone 11 after implementing various management strategies during the archery season, 1994-2015.



# Deer Hunter Expenditures, Effort, Venison Calculations, and Opinions

Deer hunting-related expenditures contribute significantly to Connecticut's economy. Deer permit sales generated \$1,626,606 in 2012, \$1,601,187 in 2013, \$1,704,083 in 2014 and \$1,687,962 in 2015 to the Connecticut General Fund. In addition, data collected from the annual deer hunter surveys indicated that Connecticut deer hunters spent an estimated \$6,831,288 on deer hunting-related goods and services, down from the \$7,683,988 spent in 2014.

In 2015, deer hunters spent a cumulative total of 464,450 days afield. Private and state land shotgun/rifle hunters used the greatest percentage of available hunting days during those seasons (36% and 47% respectively). Although bowhunters used a smaller percentage of available hunting days (26%), the archery season is much longer than the firearms season. Connecticut deer hunters collectively spent more time (50 days per deer taken) and more money (\$750 per deer taken) in 2015 compared to 2014 (35 days at \$655 per deer taken). In 2015, hunters harvested an estimated 455,650 pounds (average 50 lbs. of meat/hunter; 203 tons total) of venison at an estimated value of \$3,075,538 (\$6.75/lb).

In 2015, a question was added to the hunter survey to assess hunter interest in allowing hunters to purchase both a state land A and B season permit. The majority of hunters (62%) were in favor of allowing hunters to purchase both permits; 20% were not supportive; and 18% had no opinion. The majority of hunters believed landowners (75%) and individuals over 65 years of age (91%) should continue to receive permits free-of-charge. Hunters were asked how frequently they purchase their Connecticut deer permits. Excluding state land muzzleloader hunters (38%), most state land shotgun hunters (50%), private land muzzleloader hunters (58%), private land shotgun/rifle hunters (70%), archers (77%), and landowners (78%), purchase permits every year. When asked how frequently hunters purchase their permits, over half (57%) purchase all of their deer permits when they purchase their license; a quarter (26%) purchase permits prior to the start of the season, but not at the same time they purchase their license; a quarter (23%) purchase their permits prior to or during the season if they believe they will be able to hunt; and a small percentage purchase additional permits based on their venison needs (3%), success during the season (3%), and the weather (3%). Regardless of permit type, limited time (30-51%) and limited access to land (13-48%) were the primary reasons why hunters do not get permits on a regular basis. Cost of permits (12-19%) and low success rates (3-20%) also had some influence on hunters purchasing permits, while driving distance to hunting areas and health issues (2-7%) had little influence on hunters purchasing permits. Half of hunters (50%) were satisfied (moderately to very satisfied) with their 2015 hunter experience, while 18% were slightly satisfied and 21% were not at all satisfied. Ten percent of hunters had no opinion. Just over half of hunters (51%) do not support implementing an antler point restriction; 33% support it; and 15% had no opinion.

# **Subscription Rates for State Land Lottery Permits**

In 2014, 1,138 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 1 shotgun permit per 20 acres. In many areas, permit issuance was less than the permit quota established for a given area and many areas were re-designated as no-lottery areas. In 2015, the total number of lottery hunt areas was 17. Sixty-five percent of all potential lottery permits were issued. No areas reached 100% permit issuance (Table 12).

Table 12. Instant award deer lottery selection results by Deer Hunting Lottery Area, 2015.

Deer Hunting	% of Hunting Slots Filled
Lottery Area	2015
7	55 <sup>A</sup>
8	$68^{A}$
9	73 <sup>A</sup>
26	67
27	$68^{A}$
28	80
51 (Yale)	$68^{A}$
52 (Bristol Water Co)	78
53 (Maromas)	93 <sup>A</sup>
54 (Skiff Mt.)	$89^{A}$
56 (BHC-Centennial Watershed State Forest)	75
58 (Metropolitan District Commission Nepaug-Valentine)	45
59 (Metropolitan District Commission Nepaug Pine Hill)	31 <sup>A</sup>
60 (Tankerhoosen)	80
61 (Roraback WMA)	45
62 (Aldo Leopold)	38
63 (Mohawk-Ziegler)	33

A Lottery for A season only.

# **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 in 1996 regarding hunter observations of moose during the fall hunting season. Deer hunters reported 106 moose sightings (148 individuals) in 43 towns in 2015 and 845 sightings over the past 20 years (Figure 10). During the 20-year period, moose sightings were reported in 92 different towns. Sightings were reported from 9 to 43 different towns each year. Moose were observed in Barkhamsted, Canaan, Colebrook, Goshen, Hartland, Norfolk, Salisbury, Stafford, and Union for 6 of the last 10 years. Most of the towns where hunters report moose sightings occur along the Connecticut-Massachusetts border. In 2015, an average of 1 moose was observed by hunters for every 524 hunter-days spent in the field, less days than in 2014 when 1 moose was observed for every 841 hunter-days in the field. Currently, Connecticut has no open hunting season for moose.

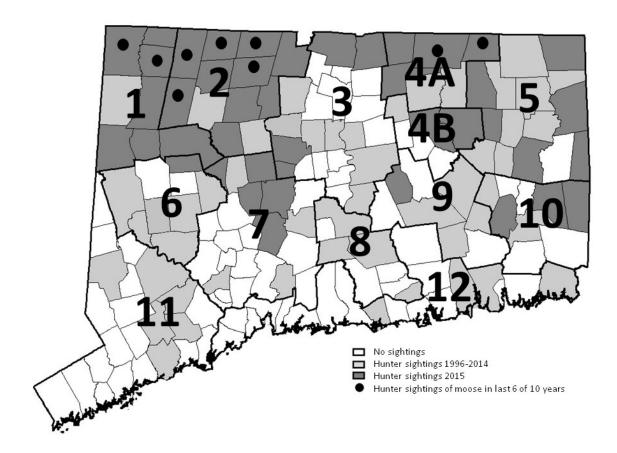
### **Controlled Deer Hunts**

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 2015 controlled hunt, 22 deer 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 asked to continue participating in the program. During the 2015 controlled hunt, 11 deer were harvested.

Maromas Cooperative Management Area (Area 53): Since 1996, Maromas, a 1,400-acre parcel in Middletown owned by Northeast Utilities (now known as Eversource), has been open to shotgun and muzzleloader hunting to maintain deer densities at levels compatible with available habitat. During the 2015 controlled hunt, 21 deer were harvested.

Figure 10. Moose sightings reported on deer hunter surveys, 1996-2015.



**Skiff Mountain (Area 54):** Skiff Mountain is a 710-acre property in Sharon owned by Northeast Utilities (now known as Eversource). It is open to shotgun and muzzleloader hunting. During the 2015 controlled hunt, 2 deer were harvested.

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). During the 2015 controlled hunt, 73 deer were harvested.

MDC Nepaug Reservoir (Area 58 and 59): In 2007, MDC contacted the Wildlife Division and expressed concern about the impacts of deer on forest regeneration at their Valentine (Area 58, 1,075 acres) and Pine Hill (Area 59, 325 acres) forest blocks. A browse survey indicated that over 95% of forest regeneration was browsed by deer. In 2008, MDC worked with the Wildlife Division to develop a deer management plan for the two forest blocks. In 2009, both Valentine and Pine Hill were opened to hunting for the early archery and shotgun/rifle seasons. During the 2015 controlled hunt, 13 deer were harvested.

**Bluff Point:** Controlled hunts and DEEP deer removals at Bluff Point Coastal Reserve in Groton have been implemented over the past 17 years to reduce and maintain the deer population at about 25 animals. Since the program started in 1996, over 500 deer have been removed from Bluff Point, resulting in improved deer herd health and ecosystem stability. In December 2015, the deer population was estimated to be 44 deer. In February 2016, 18 deer were removed by DEEP personnel. After the March 2016 removal, the population was estimated at 26 deer.

# **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 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. In 2015, the crop damage application and deer registration process were streamlined. Crop damage applications can now be obtained from the Department's

website and filled out electronically. Crop damage shooters are no longer required to mail in paper tags upon harvesting a deer, but are now required to report their harvest online or by telephone. During the 2015 calendar year, 464 deer were taken with crop damage permits (Appendix 3). From 1993-2015, annual deer harvest with crop damage permits has fluctuated between 464 and 946 deer. Harvest in DMZ 7 accounted for 15.5% of deer removed with crop damage permits in 2015. Crop damage harvest increased steadily from May to October, with 57% of the annual harvest occurring in September and October (Figure 11). Crop damage permits are not valid in November and December.

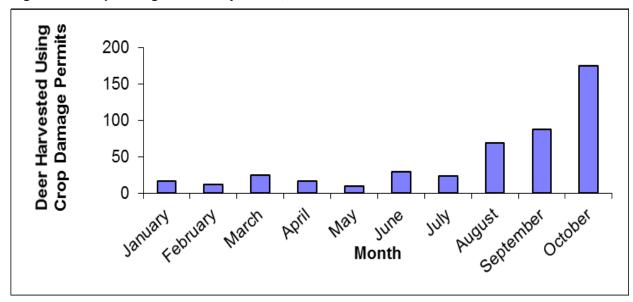


Figure 11. Crop damage harvest by month, 2015.

# **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 2015, 1,277 non-hunting deer mortalities were reported (Appendix 4). Of those, 749 were killed in deer-vehicle collisions. This equates to an average of 2 deer being killed per day on Connecticut roads and highways. Deer-vehicle collisions accounted for 92% of all reported non-hunting mortality (excluding crop damage) in 2015. 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 vehicles and not reported. Based on this correction factor, it is estimated that the actual number of roadkills in 2015 was 4,494. Nearly 14% (116) of all roadkilled deer reported in Connecticut in 2015 occurred in DMZ 11 (Fairfield County, Figure 2), which was lower than past years (Appendix 5). 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, and the legalization of baiting (Figure 8). For the first time in 35 years, DMZ 7 was ranked as the highest zone for roadkilled deer rather than DMZ 11. Non-hunting mortality comprised 11.8% of the total reported deer mortality in Connecticut, including crop damage harvest (Appendix 4).

#### Conclusion

Over the past 35 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 unlimited deer may be taken in 2 of the 13 Deer Management Zones. Historically, deer permit issuance 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 may be attributed to the poor economy, where harvesting one's own food may be a desirable means of obtaining quality protein. In 2009, permit issuance declined slightly, likely due to the switch to online license sales, and declined again in 2010, likely due to the increased cost of permits. Permit issuance the past few years has again declined, possibly due to changes in the lottery system and the ability to purchase permits at any time rather than in advance of the hunting season. Permit issuance in 2015 declined to levels similar to 1988. 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 had more than doubled, and is now beginning to come down, while roadkills have been exhibiting a steady downward trend in those zones. Increased harvest opportunities appear to have stabilized deer populations in many areas of the state.

The Wildlife Division continues to conduct research and evaluate the effectiveness of methods to control deer populations, particularly in urban-suburban landscapes. The Division initiated several long-term urban deer studies in residential communities in past 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. Copies of these reports can be obtained from the DEEP website at <a href="www.ct.gov/deep/wildlife">www.ct.gov/deep/wildlife</a>, by contacting the Wildlife Division's Deer Program via email at <a href="management-andrew.labonte@ct.gov">andrew.labonte@ct.gov</a> or calling the Wildlife Division's Franklin office at 860-418-5921. 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/deep/lib/deep/wildlife/pdf\_files/game/urbandeer07.pdf) to assist communities in developing effective deer management programs. Another publication, *An Evaluation of Deer Management Options*, was made available in 2009 by the Northeast Deer Technical Committee and can be found on the DEEP website as well (www.ct.gov/deep/lib/deep/wildlife/pdf\_files/game/deeroptions.pdf).

Appendix 1. Total reported deer harvest and roadkills by town, 2015.

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Andover	29	24	11	2	0	1	0	67
Ansonia	7	2	0	0	0	0	0	9
Ashford	25	76	17	5	4	2	0	129
Avon	10	12	0	2	0	16	2	42
Barkhamsted	14	21	6	1	0	1	0	43
Beacon Falls	7	17	0	1	0	0	0	25
Berlin	38	16	7	5	0	0	0	66
Bethany	32	14	3	3	1	5	0	58
Bethel	38	10	0	0	0	7	1	56
Bethlehem	6	10	1	1	0	1	0	19
Bloomfield	18	7	2	4	0	5	1	37
Bolton	10	7	2	2	8	0	0	29
Bozrah	16	23	12	1	9	0	0	61
Branford	17	2	0	0	0	2	0	21
Bridgeport Bridge	1	1	0	0	0	0	0	2
Bridgewater	23	19	4	1	1	1	0	49
Bristol	9	11	2	0	0	11	1	34
Brookfield	40	7	0	4	1	7	1	60
Brooklyn	20	31	5	5	2	6	0	69
Burlington	14	27	1	3	0	5	0	50
Canaan	16	44	5	3	6	0	0	74
Canterbury	31	29	18	7	9	4	0	98
Canton	18	14	4	2	0	9	0	47
Chaplin	16	17	6	6	0	2	0	47
Cheshire	70	24	1	3	28	4	2	132
Chester	23	22	1	2	0	2	0	50
Clinton	11	3	0	0	2	0	0	16
Colchester	41	56	15	6	12	1	0	131
Colebrook	2	12			0		0	17
	26	22	9	0	2	2	0	61
Columbia	12		3	9	0	0	0	57
Cornwall		33			<b>†</b>			
Coventry	46 9	74 3	8	0	6	2	0	140 22
Cromwell			1		8	1	0	
Danbury	62	8	0	0	0	4	0	74
Darien	32	0	0	0	0	3	3	38
Deep River	7	10	4	3	2	0	1	27
Derby	2	3	0	0	0	0	0	5
Durham	39	21	2	2	0	2	0	66
East Granby	5	7	2	1	0	9	0	24
East Haddam	61	94	31	9	8	8	0	211
East Hampton	32	37	4	8	0	3	1	85
East Hartford	5	6	0	0	1	3	0	15
East Haven	19	1	0	0	0	1	0	21
East Lyme	30	16	3	3	1	13	0	66
East Windsor	15	27	3	2	1	1	0	49
Eastford	18	32	7	3	0	2	4	66
Easton	66	33	0	2	8	15	0	124
Ellington	14	14	9	2	0	5	0	44

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Enfield	23	15	5	0	0	8	0	51
Essex	3	1	1	0	0	0	0	5
Fairfield	83	10	0	1	0	8	2	104
Farmington	7	11	0	1	1	17	1	38
Franklin	11	23	8	5	5	2	0	54
Glastonbury	43	35	2	6	12	13	3	114
Goshen	12	20	9	2	0	1	0	44
Granby	11	12	4	2	0	5	0	34
Greenwich	93	2	0	5	0	0	0	100
Griswold	32	52	12	6	19	3	0	124
Groton	26	9	0	1	4	2	0	42
Guilford	54	31	3	3	4	12	1	108
Haddam	47	44	13	14	0	3	0	121
Hamden	23	17	1	2	25	2	0	70
Hampton	17	33	12	3	4	2	0	71
Hartford	0	0	0	0	0	0	0	0
Hartland	2	13	3	2	0	1	0	21
Harwinton	19	16	4	0	7	8	0	54
Hebron	32	43	10	5	0	1	0	91
Kent	26	32	3	5	9	7	0	82
Killingly	23	41	16	7	6	5	1	99
Killingworth	37	35	6	5	0	1	0	84
Lebanon	47	80	14	9	13	6	0	169
Ledyard	28	34	5	3	0	15	1	86
Lisbon	9	26	12	2	0	2	0	51
Litchfield	22	49	9	6	2	2	2	92
Lyme	20	40	8	7	2	0	1	78
Madison	16	13	1	0	0	6	0	36
Manchester	15	7	1	1	0	9	0	33
Mansfield	74	42	10	8	8	18	1	161
Marlborough	23	39	10	7	0	1	0	80
Meriden	22	3	0	0	0	6	0	31
Middlebury	15	11	2	2	0	5	0	35
Middlefield	27	19	0	2	9	1	0	58
Middletown	58	35	9	8	0	6	0	116
Milford	19	1	0	1	1	3	0	25
Monroe	30	8	1	1	0	0	0	40
Montville	32	29	7	2	1	16	0	87
Morris	12	12	1	5	3	1	0	34
Naugatuck	34	18	1	1	0	2	0	56
New Britain	1	0	0	0	0	1	0	2
New Canaan	50	1	0	0	0	17	7	75
New Fairfield	22	10	0	1	0	0	0	33
New Hartford	19	19	6	2	8	4	0	58
New Haven	6	0	0	1	0	6	0	13
New London	3	2	0	0	1	0	0	6
New Milford	58	65	5	6	6	0	0	140
Newington	1	0	0	0	0	0	0	1
Newtown	151	38	2	4	14	26	0	235

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Norfolk	4	20	2	0	0	1	0	27
North Branford	32	7	0	2	2	27	3	73
North Canaan	5	6	1	1	0	2	0	15
North Haven	20	5	0	0	0	2	0	27
North Stonington	36	39	13	5	0	5	0	98
Norwalk	15	1	0	0	0	0	0	16
Norwich	30	19	1	1	0	29	0	80
Old Lyme	52	11	0	2	0	1	0	66
Old Saybrook	15	6	0	0	0	6	1	28
Orange	47	4	0	0	0	3	0	54
Oxford	25	21	7	3	5	8	0	69
Plainfield	56	33	10	1	0	3	0	103
Plainville	9	4	0	0	0	0	0	13
Plymouth	6	6	3	0	0	1	0	16
Pomfret	41	45	9	9	5	4	0	113
Portland	13	26	4	3	1	13	1	61
Preston	30	23	14	2	18	2	1	90
Prospect	21	6	0	2	0	7	0	36
Putnam	19	12	4	3	0	7	0	45
Redding	90	20	0	0	9	1	0	120
Ridgefield	113	37	0	5	0	9	4	168
Rocky Hill	6	4	0	0	4	0	0	14
Roxbury	11	20	3	4	5	2	0	45
Salem	24	27	4	5	0	1	0	61
Salisbury	64	46	5	11	7	4	0	137
Scotland	21	31	9	3	3	4	0	71
Seymour	23	7	2	4	0	6	1	43
Sharon	43	71	9	10	3	1	0	137
Shelton	39	6	1	3	12	5	0	66
Sherman	22	18	1	2	2	1	0	46
Simsbury	18	6	0	0	0	2	0	26
Somers	21	10	4	2	0	5	1	43
South Windsor	24	15	4	3	2	1	2	51
Southbury	36	17	2	3	5	19	0	82
Southington	23	7	0	5	3	5	1	44
Sprague	11	25	9	5	0	0	0	50
Stafford	66	46	26	5	2	5	1	151
Stamford	41	0	0	0	0	1	0	42
Sterling	35	21	9	4	4	1	0	74
Stonington	43	20	5	6	6	11	0	91
Stratford	13	0	0	0	0	1	0	14
Suffield	13	20	7	2	0	4	0	46
Thomaston	8	7	1	2	3	2	0	23
Thompson	59	46	22	9	14	1	0	151
Tolland	42	20	6	2	8	3	0	81
Torrington	10	12	3	1	0	6	0	32
Trumbull	32	0	0	0	0	7	2	41
Union	23	21	7	8	0	3	0	62
Vernon	13	14	0	1	0	7	1	36

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Voluntown	31	56	13	5	11	3	0	119
Wallingford	56	30	0	7	5	12	4	114
Warren	6	25	1	2	5	2	0	41
Washington	27	27	7	7	22	4	0	94
Waterbury	13	2	0	0	0	1	0	16
Waterford	76	25	10	5	0	16	0	132
Watertown	22	10	3	0	0	0	0	35
West Hartford	1	0	0	0	0	2	1	4
West Haven	12	2	0	0	1	0	0	15
Westbrook	5	4	0	1	0	2	0	12
Weston	33	23	0	0	0	0	0	56
Westport	5	0	0	0	0	0	0	5
Wethersfield	0	2	1	1	1	1	0	6
Willington	27	22	6	3	0	7	0	65
Wilton	88	27	0	7	0	4	2	128
Winchester	11	12	6	1	0	2	0	32
Windham	23	31	1	5	4	2	0	66
Windsor	11	8	1	1	1	5	0	27
Windsor Locks	2	0	0	0	0	1	0	3
Wolcott	10	5	0	1	0	3	0	19
Woodbridge	37	4	0	1	0	10	1	53
Woodbury	12	26	2	1	7	8	0	56
Woodstock	55	49	18	13	0	4	0	139
Totals	4,566	3,373	702	472	464	749	64	10,390

Appendix 2. Sex ratios (male:female) of deer harvested during Connecticut's regulated hunting seasons, 2013-2015.

							3-year	Average			
	20	013	2	014	2	015	(201	3-2015)	Male	es per Fe	male
Season	Males	Females	Males	Females	Males	Females	Males	Females	2013	2014	2015
Archery											
State Land	369	347	332	283	302	253	334	294	1.06	1.17	1.19
Private Land	2,546	2,474	2,278	2,469	2,025	1,947	2,283	2,297	1.03	0.92	1.04
Subtotal	2,915	2,821	2,610	2,752	2,327	2,200	2,617	2,591	1.03	0.95	1.06
Muzzleloader											
State Land	41	80	40	52	40	38	40	57	0.51	0.77	1.05
Private Land	317	499	239	423	157	235	238	386	0.64	0.57	0.67
Subtotal	358	579	279	475	197	273	278	442	0.62	0.59	0.72
Shotgun/Rifle											
State Land	420	269	415	219	365	187	400	225	1.56	1.89	1.95
Private Land	2,077	1,550	1,895	1,554	1,607	1,203	1,860	1,436	1.34	1.22	1.34
Subtotal	2,497	1,819	2,310	1,773	1,972	1,390	2,260	1,661	1.37	1.30	1.42
Landowner	748	462	648	429	451	250	616	380	1.62	1.51	1.80
Total	6,518	5,681	5,847	5,429	4,947	4,113	5,771	5,074	1.15	1.08	1.20

Appendix 3. Deer harvested using crop damage permits in Connecticut's Deer Management Zones, 2003-2015.

							Year						
Zone	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	106	98	82	64	58	59	55	45	37	67	44	39	32
2	16	24	18	18	17	17	12	19	17	25	15	16	15
3	61	109	105	71	49	76	101	70	99	70	97	99	30
<b>4A</b>	17	9	25	14	21	21	6	4	10	15	16	8	10
<b>4B</b>	35	46	38	32	33	51	33	39	28	41	56	55	24
5	71	124	129	95	68	119	95	57	93	87	88	77	55
6	77	56	82	77	54	90	58	78	56	74	62	89	49
7	78	90	62	69	89	114	93	88	123	127	118	110	72
8	42	53	37	47	33	42	33	32	28	36	40	41	11
9	42	43	53	48	30	69	79	55	56	56	77	65	35
10	45	36	50	66	51	82	76	75	104	90	83	90	53
11	164	159	114	109	116	111	106	118	93	113	91	79	45
12	72	99	47	45	48	32	33	35	60	63	44	43	30
Total	826	946	842	755	667	883	780	715	804	864	831	812	464

Appendix 4. Non-hunting deer mortality reported in Connecticut, 2002-2015.

Cause of														
Death	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Road	2,434	2,778	2,620	2,667	2,029	1,967	2,190	1,902	1,456	1,683	1,177	1,211	1,081	749
Dog	6	11	2	3	3	4	3	1	1	0	2	0	5	0
Unknown	140	217	183	183	117	162	72	92	49	82	58	89	59	62
Illegal	13	5	6	2	3	1	9	3	10	4	6	4	2	2
Crop Damage	633	831	946	842	755	667	883	780	715	804	864	831	812	464
Total	3,226	3,842	3,757	3,697	2,907	2,801	3,157	2,778	2,231	2,573	2,108	2,135	1,959	1,277
Non-hunting: Harvest	1:3.7	1:3.0	1:3.6	1:3.4	1:3.4	1:3.9	1:4.0	1:4.2	1:5.5	1:5.0	1:6.7	1:5.9	1:6.8	1:7.4
% Mortality*	19.6	23.3	21.7	22.6	19.3	20.2	20.0	19.1	11.1	11.6	13.5	14.5	14.6	12.2
% of Harvest	26.9	30.3	27.7	29.2	29.2	25.3	24.9	23.6	12.4	14.0	14.7	17.0	16.1	14.0

<sup>\*</sup> Crop damage harvest is included under non-hunting mortality.

Appendix 5. Frequency of deer roadkills in each of Connecticut's Deer Management Zones, a 5-year comparison, 2011-2015.

						Five-	vear	Habitat		Roadkills/S	Sq. Mile
Zone	2011	2012	2013	2014	2015		Zonal %	(sq. miles)	2013	2014	2015
1	82	60	71	70	18	301	5.1	344.1	0.21	0.20	0.05
2	66	58	74	55	44	297	5.0	409.9	0.18	0.13	0.11
3	162	141	166	125	112	706	12.0	272.1	0.61	0.46	0.41
<b>4A</b>	81	59	67	42	28	277	4.7	213.1	0.31	0.20	0.13
<b>4B</b>	115	77	87	41	30	350	5.9	120.0	0.73	0.34	0.25
5	190	120	60	84	49	503	8.5	444.9	0.13	0.19	0.11
6	71	75	68	52	36	302	5.1	259.1	0.26	0.20	0.14
7	214	130	116	99	119	678	11.5	370.9	0.31	0.27	0.32
8	15	11	44	9	15	94	1.6	167.6	0.26	0.05	0.09
9	199	114	99	83	29	524	8.9	277.8	0.36	0.30	0.10
10	79	45	53	70	61	308	5.2	243.6	0.22	0.29	0.25
11	238	155	163	150	116	822	13.9	290.8	0.56	0.52	0.40
12	171	131	143	99	92	636	10.8	356.4	0.40	0.28	0.26
Total	1,683	1,176	1,211	1,081	749	5,900	100.0	3,770.2	0.32*	0.29*	0.20*

<sup>\*</sup> These numbers are averages, not totals.

Appendix 6. Deer harvest on state Deer Lottery Hunting Areas (DLHA), 2015.

DLHA	Shotgun	Muzzleloader	Archery	Total
7	0	0	0	0
8	2	1	6	9
9	0	0	6	6
26	2	0	2	4
27	2	2	2	6
28	20	0	17	37
51	22	0	0	22
52	11	0	0	11
53	6	2	13	21
54	1	0	1	2
56	10	0	31	41
58	30	0	2	32
59	0	0	1	1
60	5	0	6	11
61	1	0	3	4
62	1	2	0	3
63	0	1	0	1
Total	113	8	90	211

Appendix 7. Archery harvest on state areas (archery only areas), 2015.

Name Of Area	Total Deer	F	M
Aldo Leopold WMA	0	0	0
Algonquin State Forest	1	0	1
American Legion State Forest	2	1	1
Assekonk Swamp WMA	3	2	1
Babcock Pond WMA	1	0	1
Barber Pond WMA	1	0	1
Barn Island WMA	8	5	3
Bartlett Brook WMA	4	3	1
Bear Hill WMA	1	0	1
Beaver Brook State Park	6	2	4
Bennett's Pond State Park	2	1	1
Bishops Swamp WMA	8	2	6
Black Rock Lake	1	1	0
Bloomfield Flood Control Area (Site 1)	1	0	1
Camp Columbia	2	1	1
Cedar Swamp WMA	1	1	0
Centennial Watershed SF	17	3	14
Centennial Watershed SF (Canaan Block)	0	0	0
Centennial Watershed State Forest (BHC)	2	0	2
CL&P (borders Newgate WMA)	0	0	0
Cockaponset State Forest	39	18	21
Collis P. Huntington State Park	12	3	9
Cromwell Meadows WMA	1	0	1
Durham Meadows WMA	2	1	1
East Twin Lakes Water Access Area	8	7	1
Eight Mile River WMA	1	0	1
Ellithorpe Flood Control Area	0	0	0
Franklin Swamp WMA	1	1	0
Great Swamp Flood Control Area	4	3	1
Harkness/Verkades	15	7	8
Higganum Meadows WMA	3	1	2
Housatonic River WMA	6	6	0
Housatonic State Forest	3	0	3
Jim Spignesi WMA	0	0	0
Kollar WMA	7	1	6
Larson Lot WMA	0	0	0
Lebanon Coop Mgmt. Area	2	1	1
Little River Fish and Wildlife Area	0	0	0
Mansfield Hollow Lake	15	9	6
Mansfield State-Leased Field Trial Area	1	0	1

Name Of Area	Total Deer	F	M
Mattatuck State Forest	9	5	4
MDC-Colebrook Reservoir/Hogback Dam	0	0	0
MDC - Valentine Block	4	2	2
MDC Greenwoods	3	2	1
Meshomasic State Forest	30	13	17
Messerschmidt WMA	1	1	0
Millers Pond	0	0	0
Mohegan State Forest (including Waldo Tract)	4	1	3
Mono Pond	0	0	0
Mount Riga State Park	2	0	2
Nassahegon State Forest	0	0	0
Natchaug State Forest	17	8	9
Nathan Hale State Forest Mgmt. Area	4	1	3
Naugatuck State Forest	17	5	12
Naugatuck State Forest (Great Hill Block) Naugatuck State Forest (Quillinan Reservoir	6	3	3
Block)	1	0	1
Nehantic State Forest	13	6	7
Nepaug State Forest	0	0	0
Newgate WMA	3	0	3
Nipmuck State Forest	19	13	6
Northfield Brook Lake	1	1	0
Nott Island	1	0	1
NU-Maromas Coop. WMA	13	5	8
NU-Skiff Mtn. Coop. WMA	1	1	0
Nye Holman State Forest	7	2	5
Pachaug State Forest	47	13	34
Paugnut State Forest	4	2	2
Paugussett State Forest	6	2	4
Pomeroy State Park	4	1	3
Pootatuck State Forest	0	0	0
Quaddick State Forest	7	5	2
Quinebaug River WMA	5	2	3
Quinnipiac River Marsh	2	1	1
Quinnipiac River State Park	11	6	5
Red Cedar Lake	0	0	0
Robbins Swamp WMA	2	0	2
Roraback WMA	4	1	3
Rose Hill WMA	2	0	2
Ross Marsh WMA	1	1	0
Ross Pond State Park	3	3	0
Salmon River Cove & Haddam Neck	0	0	0

Name Of Area	<b>Total Deer</b>	F	M
Salmon River State Forest	11	1	10
Scantic River State Park	5	3	2
Selden Island State Park	1	0	1
Sessions Woods WMA	0	0	0
Shenipsit State Forest	21	11	10
Silvio O. Conte NWR	0	0	0
Simsbury WMA	2	1	1
Suckerbrook Flood Control	2	2	0
Sunnybrook State Park	1	0	1
Suffield WMA	0	0	0
Talbot WMA	3	1	2
Tankerhoosen WMA	6	1	5
Thomaston Dam	1	0	1
Trout Brook Valley State Park	2	1	1
Tunxis State Forest	4	0	4
Wangunk Meadows	3	0	3
West Thompson Dam	5	4	1
Wopowog WMA	0	0	0
Wyantenock State Forest	1	0	1
Zemko Pond WMA	0	0	0