2016 Connecticut Deer Program Summary

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Introduction

This booklet is the 35th 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 2016, 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 (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.

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 began in 2017 and is expected to be completed in 2018/2019.

The Division expects to be collecting deer heads to test for chronic wasting disease (CWD) during the 2017 hunting season. Anyone interested in donating deer heads from harvested deer should contact William Embacher (william.embacher@ct.gov) or Andrew LaBonte (andrew.labonte@ct.gov) at 860-418-5989 or 860-418-5921 for more information.

Hunter Notes

In 2016, a cooperative effort between Stewart B. McKinney National Wildlife Refuge (SBMNWR) and the Connecticut Department of Energy and Environmental Protection Wildlife Division (DEEP) allowed for the collection of 328 CWD samples from throughout the state, all of which tested negative. Since first beginning collection efforts in 2003, nearly 6,000 samples have been collected, all of which have tested negative for CWD.

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 allow Sunday bowhunting on private properties during the archery season in areas of the state with an overpopulation of deer (includes all DMZs except 2, 3, and 4A). 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.

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 (www.ct.gov/deep/hunting). 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 www.ct.gov/deep/sportsmenlicensing.

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 (www.ct.gov/deep/lib/deep/regulations/26/26-55-4.pdf) and an updated list of states where CWD has been documented can be found on the DEEP website at www.ct.gov/deep/hunting.

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 2016 hunting season, 10,662 deer were legally harvested and reported (Table 1; Figure 1). This represents a 17% increase from the 2015 harvest. Harvest by crossbow hunters comprised 62%, 41%, and 54% of the January harvest in 2015, 2016, and 2017.

In 2016, 1,772 deer were harvested during the first 4 days of the shotgun/rifle season, a 9% increase from 2015 (1,620). Using the telephone and online reporting systems, the reported shotgun/rifle harvest was 3,857 deer in 2016, a 14.3% increase from 2015 (3,373). In 2016, the landowner harvest was 875, a 24.6% increase from 2015 (702). 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 increase in harvest is likely due to a slight decline in acorn abundance from 2015 and slightly cooler temperatures.

The antlerless and either-sex replacement tag harvest was higher in 2016 (379) than in 2015 (316). Deer harvested under the replacement antlerless and either-sex tag program (379) contributed to 15.8% of the total deer harvest on private land in DMZs 11 and 12. Archery and shotgun/rifle seasons accounted for 49.6% and 36.2% of all deer taken in 2016, which is the fourth consecutive year the archery harvest has exceeded the shotgun/rifle harvest. Landowners and muzzleloader hunters accounted for 8.2% and 6.0% of all deer taken in 2016. Harvest varied considerably by season and town (Appendix 1). The overall increase in the 2016 deer harvest was likely attributed to a low harvest during the 2015 season, mild winters with increased survival and productivity, and a slightly lower abundance of acorns than during the previous year.

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 recent 3-year average harvest for Junior Deer Hunter Training Days is 74 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 9% (2009-2011) from the previous 3-year average of 61,859 (2006-2008). 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 2016 was similar to issuance in 1989. Issuance for private land shotgun/rifle permits had the greatest 1-year decline (12.9%), followed by state land muzzleloader (8.8%). Archery permit issuance stabilized (<1% change) after reaching an all-time high of 16,975 in 2015. Overall, shotgun/rifle hunters purchased the largest percentage of permits (38%), followed by archery hunters (35.2%), muzzleloader hunters (19.0%), and landowners (7.9%). Seventy-one percent of firearms deer permits were issued for use on private land and the remaining 29% were issued for state-managed lands. During the seventh year of authorizing the use of revolvers for deer hunting, 807 hunters took advantage of this opportunity, a 1.6% decrease in issuance from 2015 (820).

Table 1. Deer harvested during Connecticut's regulated hunting seasons, 2015-2016.

Season	Harvest 2015	Harvest 2016	3-year Average Harvest (2013-2015)	% of Total 2016	% Change from 2015 to 2016	% Change 3-year Average to 2016
Archery						
State Land	567	663	638	6.2%	16.9%	3.9%
Private Land	3,843	4,425	4,480	41.5%	15.1%	-1.2%
Replacement Antlerless[A, B]	158	174	219	1.6%	10.1%	-20.7%
Either-sex Tag[A, B]	75	93	99	0.9%	24.0%	-6.4%
January[E]	156	198	230	1.9%	26.9%	-13.8%
Replacement Antlerless[A, B]	5	13	20	0.1%	160.0%	-36.1%
Either-sex Tag[A, B]	0	0	2	0.0%	0.0%	-100.0%
Crossbow[B]	64	107	117	1.0%	67.2%	-8.5%
Subtotal	4,566	5,286	5,348	49.6%	15.8%	-1.2%
Muzzleloader						
State Land	79	75	102	0.7%	-5.1%	-26.7%
Private Land	393	569	627	5.3%	44.8%	-9.3%
Replacement Antlerless[A, C]	1	6	12	0.1%	500.0%	-50.0%
Either-sex Tag[A, C]	6	5	5	0.0%	-16.7%	-6.2%
Subtotal	472	644	730	6.0%	36.4%	-11.7%
Shotgun/Rifle						
State Land A	509	573	567	5.4%	12.6%	1.1%
State Land B	49	84	65	0.8%	71.4%	28.6%
Private Land	2,815	3,200	3,307	30.0%	13.7%	-3.2%
Replacement Antlerless[A, D]	20	30	21	0.3%	50.0%	42.9%
Either-sex Tag[A, D]	51	58	56	0.5%	13.7%	3.6%
Revolver[D]	7	7	6	0.1%	0.0%	16.7%
Muzzleloader[D]	26	16	25	0.2%	-38.5%	-35.1%
Subtotal	3,373	3,857	3,939	36.2%	14.3%	-2.1%
Youth Hunting Days[D]	59	65	74	0.6%	10.2%	-12.6%
Landowner	702	875	1002	8.2%	24.6%	-12.6%
Total	**9,113**	**10,662**	**11,019**	**100.0%**	**17.0%**	**-3.2%**

[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] *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, 1975-2016.

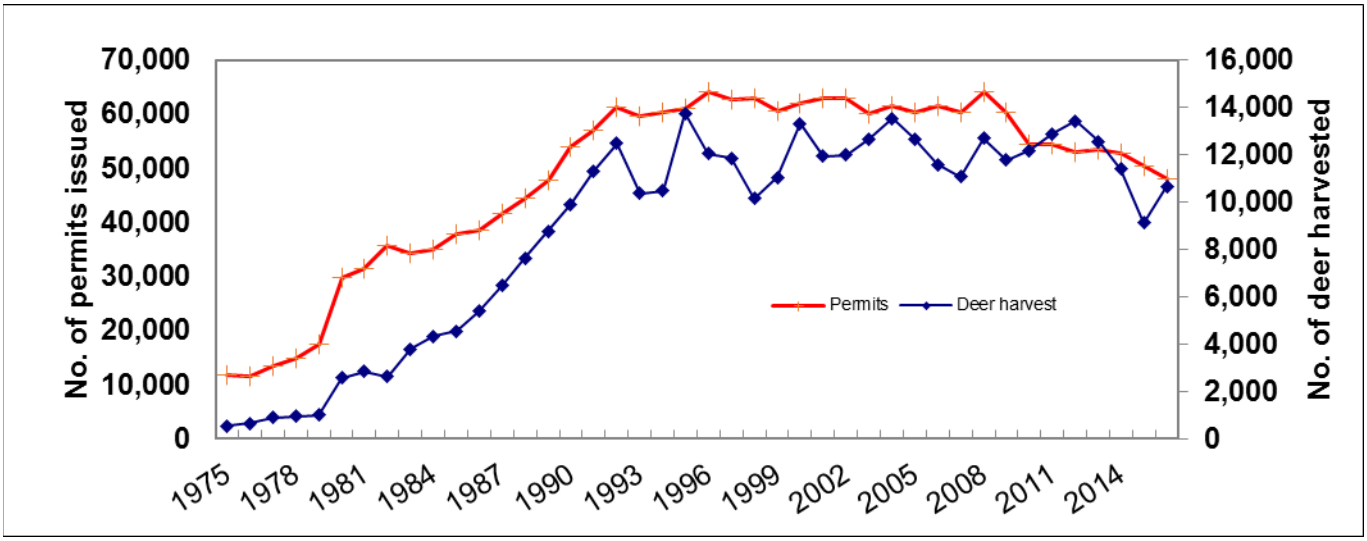


Table 2. Deer hunting permits issued in Connecticut for all regulated hunting seasons, 2014-2016.

Season	Permits 2014	Permits 2015	Permits 2016	3-Year Average Permits 2013-2015	% of Total 2016	% Change 2015 to 2016	% Change 3-year Avg. to 2016
Archery	16,603	16,975	16,864	16,401	35.2%	-0.7%	2.8%
Muzzleloader					0.0%		
State Land	3,339	3,139	2,864	3,288	6.0%	-8.8%	-12.9%
Private Land	7,614	6,447	6,262	7,268	13.1%	-2.9%	-13.8%
Subtotal	10,953	9,586	9,126	10,556	19.0%	-4.8%	-13.5%
Shotgun/Rifle							
State Land A*	5,069	4,755	4,534	5,103	9.5%	-4.6%	-11.1%
State Land B*	1,781	1,615	1,615	1,752	3.4%	0.0%	-7.8%
Private Land	14,321	13,760	12,052	14,371	25.1%	-12.4%	-16.1%
Subtotal	21,171	20,130	18,201	21,226	38.0%	-9.6%	-14.3%
Revolver[A]	774	820	807	828	1.7%	-1.6%	-2.6%
Landowner	4,109	3,818	3,767	4,114	7.9%	-1.3%	-8.4%
Total	**52,836**	**50,509**	**47,958**	**52,298**	**100.0%**	**-5.1%**	**-8.3%**

** Includes controlled hunt permits.*
[A] Not included in total 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 last hunting season (26.9% in 2015). This year, archery success again exceeded 30% (31.3%). Success rates in 2016 increased slightly for most hunting seasons compared to the 3-year average. In 2016, archery hunters had the highest annual success rate (31.3%), followed by private land shotgun/rifle hunters (26.6%) and landowners (23.2%). Success rate for the combined muzzleloader seasons was 7.1%. Lower success rates are expected because the muzzleloader season occurs after the shotgun/rifle deer hunting seasons.

Table 3. Deer hunter success rates (%) in Connecticut, 2015-2016.

Season	2015	2016	3-year Avg. Success Rate (2013-2015)	Difference from 2015	Difference from 3-year Avg.
Archery					
Combined[1]	26.9%	31.3%	33.6%	4.4%	-2.3%
Muzzleloader					
State Land	2.5%	2.6%	3.1%	0.1%	-0.5%
Private Land	6.1%	9.1%	8.6%	3.0%	0.5%
Combined	4.9%	7.1%	6.9%	2.1%	0.2%
Shotgun/Rifle					
State Land A	10.7%	12.6%	11.0%	1.9%	1.6%
State Land B	3.0%	5.2%	3.7%	2.2%	1.5%
Private Land	20.5%	26.6%	23.7%	6.1%	2.9%
Combined	16.8%	21.2%	18.9%	4.4%	2.3%
Landowner	18.4%	23.2%	24.3%	4.8%	-1.1%
Average[2]	**18.0%**	**22.2%**	**21.4%**	**4.2%**	**0.8%**

[1] *Data available only for state and private land combined.*
[2] *Average is based on total number of deer harvested/total number of permits issued.*

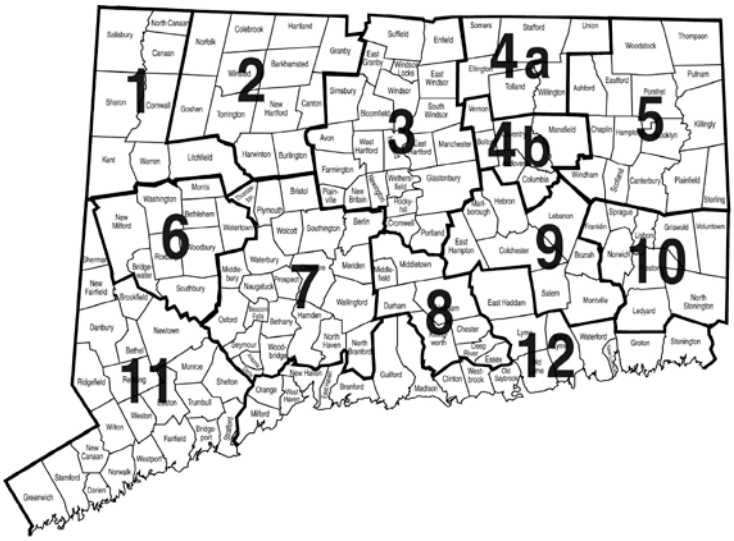
Archery Statistics

Excluding the landowner season, just over half (54%) of the deer taken during the hunting seasons were harvested by bowhunters. For the past six years (2011-2016), record bow harvests have been recorded (5,211; 5,413; 6,046; 5,433; 4,566; 5,286 respectively). For the fourth consecutive year, the bow harvest (5,286) exceeded the shotgun/rifle harvest (3,857). Seventy-three percent (3,847 – 3,269 private, 578 state) of the total archery harvest was taken during the early archery season (September 15 to November 15); 14% (804 – 751 private, 53 state) was taken during the 3-week shotgun/rifle season (open in all zones on private land and state land bowhunting-only areas); 8% (437 – 405 private, 32 state) was taken during the muzzleloader season (December 7 to December 31); and 3.7% (198) was taken during the January season open in DMZs 11 and 12 on private land only (January 1-31, 2017). During the 2016 archery season, hunters were allowed to hunt on Sundays on private land. The Sunday harvest comprised 11% of the entire archery harvest and 19% during the January season. Comparing the percent of archery deer harvested on weekends from 2014 (29%; Saturday only) to 2015 (37%; Saturday and Sunday) and 2016 (35%; Saturday and Sunday), there has been about a 6% to 8% increase in harvest on weekends during the regular season and about a 1% to 3% increase during the January season (2014, 35%; 2015, 38%; 2016, 36%) 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 2016 was 1.1, which was higher than 2015 (0.89), but the same as 2013 and 2014 (1.1). Number of fawns per doe in 2016 (0.48) was lower than in 2015 (0.73), but similar to 2014 (0.49), while number of bucks per doe in 2016 (0.48) was higher than 2015 (0.22) and 2014 (0.36).

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.

Figure 2. Connecticut's Deer Management Zones, 2016.

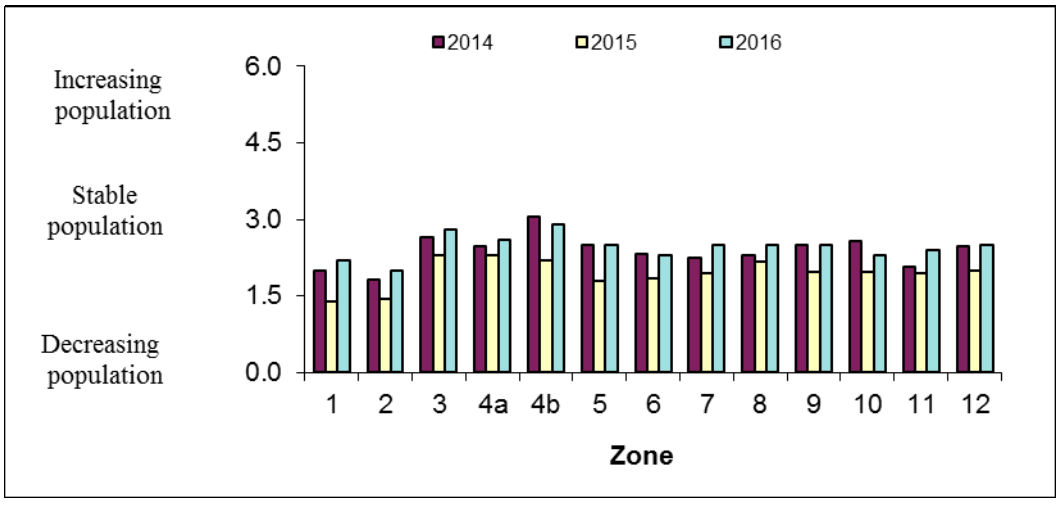


Hunter Perceptions of Population Trends

In 2016, 12,172 deer hunters were sent an email and asked to complete an online hunter survey. A total of 3,863 hunters responded for a 32% 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). Forty-four percent of the hunters who responded to the survey believed that the population was declining, 40% believed it was stable, and 16% believed it was increasing. DMZs 3 and 4B had the highest average rank (2.8 and 2.9) (Figure 3). In general, hunters perceived that deer 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 were similar between 2015 and 2016. Hunters reported 1,848 bear sightings in 126 towns in 2016 at a rate of one bear sighting per 32 days spent afield (2,411 bear sightings in 121 towns in 2015, at a rate of one bear sighting per 30 days spent afield). Hunters reported 2,690 bobcat sightings in 161 towns in 2016 at a rate of one bobcat sighting per 22 days spent afield (3,568 bobcat sightings in 157 towns in 2015, at a rate of one bobcat sighting per 21 days spent afield). Hunters reported 9,670 coyote sightings in 169 towns in 2016 at a rate of one coyote per 6.1 days spent afield (16,263 coyote sightings in 165 towns in 2015 at a rate of one coyote per 4.5 days spent afield).

Figure 3. Perception of zonal deer population trends (average rank) by Connecticut's deer hunters, 2014-2016.



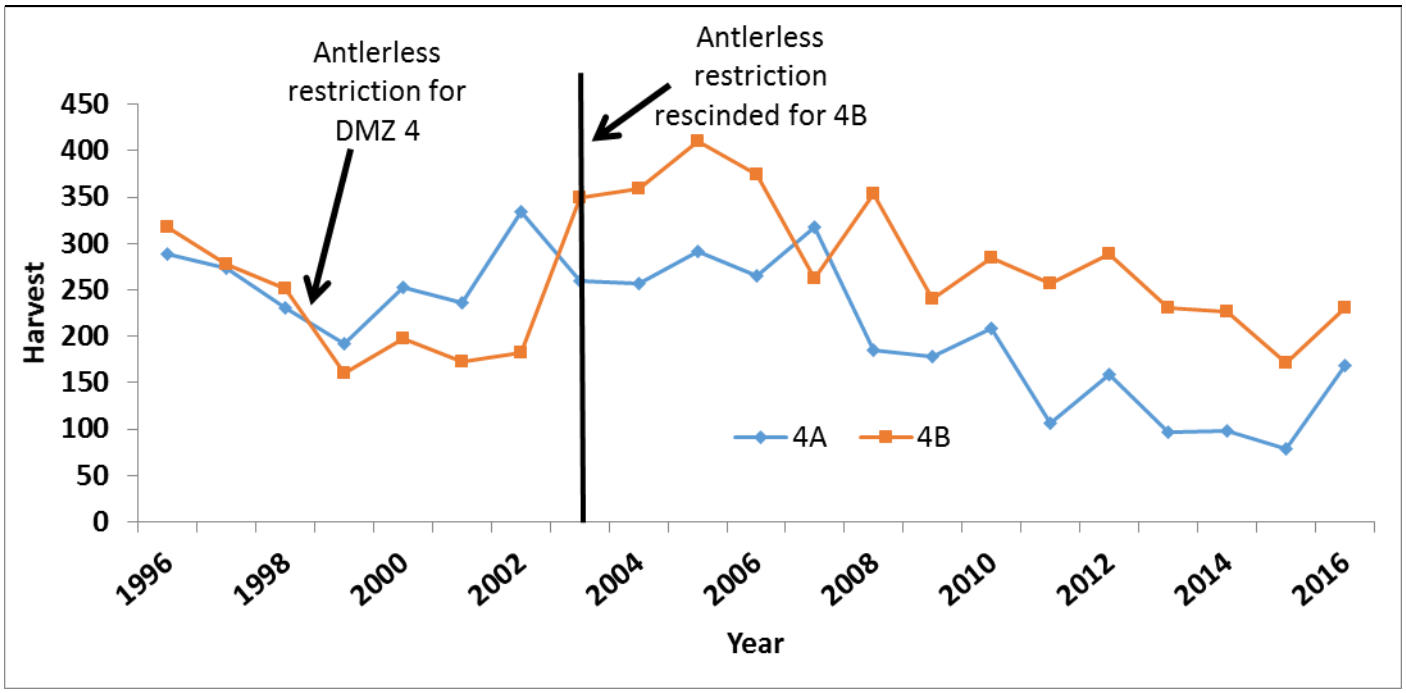
Zonal Deer Management

Because deer populations vary across the state, Deer Management Zones 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).

In DMZ 2, persistently low densities prompted harvest restrictions on female deer in 2016. During shotgun/rifle and muzzleloader seasons, the antlerless-only tag on 2-tag permits was not valid.

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 2016. 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, 1996-2016.



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 2016 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 (33%) occurred in four zones (1, 2, 5, and 9). Highest private land deer harvests were reported for DMZs 1, 5, 9, and 12. Zone 4B had the highest deer harvest per square mile (1.8) and DMZ 4B had the greatest density of hunters (5.6 per square mile). Hunter success rate was highest in zone 5 (35%), while success in zones 2 and 4A were the lowest (13% and 18%). The 3-year trend in hunter success rates by zone has fluctuated some over the past 3 years (Table 5). Although a decline occurred in 2015 due to the abundance of acorns, four DMZs (1, 4B, and 5) 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 2 (54%) hunters harvested 2 or more deer during the regular archery season. Bowhunter success rates were highest in zones 5, 6, 8, 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 2016 shotgun/rifle hunting season.

Zone	Zone Hunted Private Land[A] Shotgun/Rifle	% of Hunters Answered Question[A]	Estimated # of Private Land Shotgun/ Rifle Hunters	Harvest	Area (sq. miles)	Deer Harvest/ Sq. Mile	Hunters/ Sq. Mile	% Success Rate
1	120	9.19%	1,107	300	344.59	0.9	3.2	27%
2	120	9.19%	1,107	139	410.69	0.3	2.7	13%
3	78	5.97%	720	210	273.33	0.8	2.6	29%
4A	66	5.05%	609	109	213.5	0.5	2.9	18%
4B	73	5.59%	674	217	120.66	1.8	5.6	32%
5	171	13.09%	1,578	558	445.94	1.3	3.5	35%
6	90	6.89%	831	218	260.03	0.8	3.2	26%
7	86	6.58%	794	227	373.08	0.6	2.1	29%
8	64	4.90%	591	154	169.11	0.9	3.5	26%
9	139	10.64%	1,283	300	279.39	1.1	4.6	23%
10	85	6.51%	784	235	244.36	1.0	3.2	30%
11	98	7.50%	904	203	291.53	0.7	3.1	22%
12	116	8.88%	1,070	306	358.39	0.9	3.0	29%
Total	1,306	100%	**12,052**	**3,176**	**3,785**	**0.8**	**3.2**	**26%**

[A] *Based on hunter survey question asking hunters which zone they primarily shotgun/rifle hunt in.*

Table 5. Zonal comparisons in private land shotgun/rifle harvest, hunter distributions, and success rates, 2014-2016.

Zone	Area (sq. miles)	Deer Harvest/Sq. Mile			Hunters/Sq. Mile			Hunter Success Rate (%)		
		2014	2015	2016	2014	2015	2016	2014	2015	2016
1	344.6	0.7	0.8	0.9	2.6	3.0	3.2	28	26	27
2	410.7	0.4	0.4	0.3	2.4	2.5	2.7	15	15	13
3	273.3	0.8	0.7	0.8	3.2	3.3	2.6	26	21	29
4A	213.5	0.5	0.4	0.5	3.1	3.7	2.9	15	10	18
4B	120.7	1.9	1.4	1.8	4.8	5.1	5.6	39	28	32
5	445.9	1.5	1.0	1.3	4.3	4.4	3.5	34	23	35
6	260.0	0.9	0.8	0.8	3.6	3.7	3.2	24	20	26
7	373.1	0.6	0.6	0.6	2.6	2.9	2.1	21	20	29
8	169.1	1.0	0.8	0.9	4.6	4.6	3.5	22	17	26
9	279.4	1.2	1.0	1.1	4.0	4.7	4.6	31	21	23
10	244.4	1.3	1.0	1.0	3.7	4.2	3.2	36	23	30
11	291.5	0.8	0.7	0.7	4.1	3.7	3.1	20	18	22
12	358.4	1.0	0.7	0.9	3.3	3.4	3.0	29	21	29
Total	**3,785.0**	**0.9**	**0.7**	**0.8**	**3.4**	**3.6**	**3.2**	**27**	**20**	**26**

Table 6. Zonal comparisons of archery season success rates, 2016.

Zones	Zone Hunted Archery[A]	% of Hunters Answered Question[A]	Estimated # of Archery Hunters	Harvest	Hunter Success Rate %
1	92	4.7%	790	234	29.6
2	137	7.0%	1,177	179	15.2
3	140	7.1%	1,203	305	25.4
4A	76	3.9%	653	204	31.2
4B	84	4.3%	722	229	31.7
5	159	8.1%	1,366	489	35.8
6	89	4.5%	765	247	32.3
7	233	11.9%	2,002	603	30.1
8	90	4.6%	773	265	34.3
9	133	6.8%	1,143	296	25.9
10	80	4.1%	687	250	36.4
11	433	22.1%	3,720	1213	32.6
12	217	11.1%	1,864	574	30.8
Total	**1,963**	**100.0%**	**16,864**	**5,088**	**30.2**

[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 2016, 12.3% of the hunters who responded to the survey ranked the fall acorn crop as scarce, 52.5% as moderate, and 34.5% as abundant. DMZs 5, 8, 9, and 10 had the highest average rank (4.0-4.3), while DMZs 3, 6, and 7 had the lowest average ranks (3.1-3.4) (Figure 5). On a scale of 0-6, the average rank statewide was 3.8.

The past 24 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 and 2016 seasons, the abundance of acorns and warm weather resulted in lower hunter success rates. On average, the acorn crop statewide has been moderate most years, scarce about every 5 to 6 years, and abundant every 3 years.

Figure 5. Perception of acorn crops (average rank) by Connecticut's deer hunters, 2013-2016.

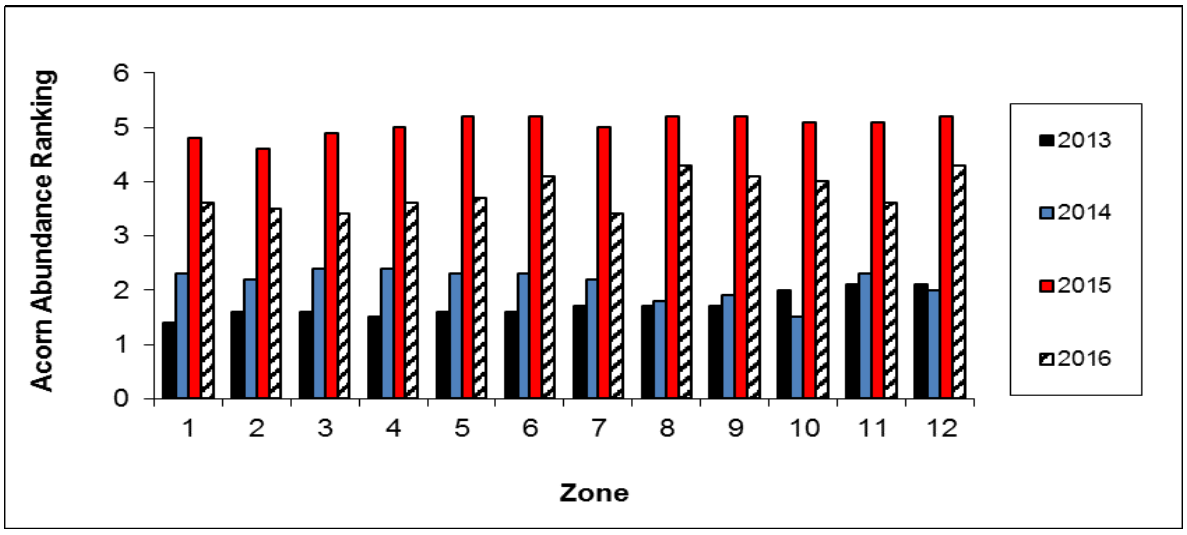
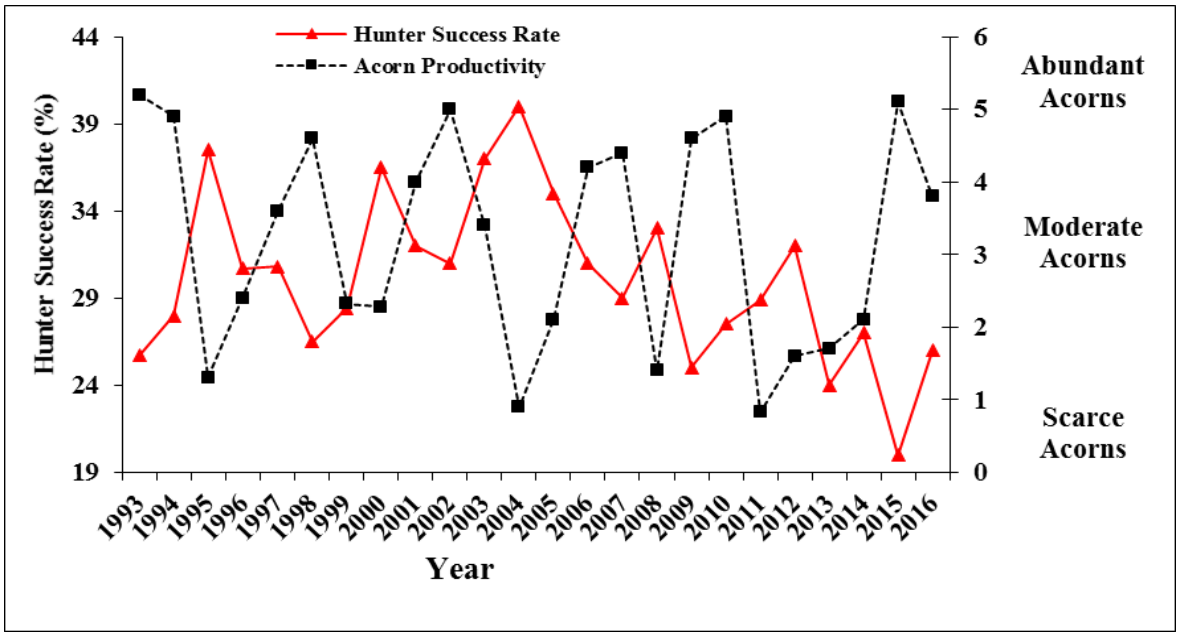


Figure 6. Relationship between private land shotgun/rifle hunter success rates and fall acorn productivity, 1993-2016.



Private Land Deer Harvest

The 2016 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 reported 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 increased 35.8% from 2015 to 2016.

Table 7. Private land deer harvest for all seasons (excluding landowner) in each of Connecticut's Deer Management Zones, 2006-2016.

	Year										
Zone	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
1	639	680	710	719	703	721	728	558	521	472	573
2	357	323	385	394	320	374	395	356	296	273	294
3	362	338	397	442	481	487	529	491	536	426	516
4A	218	259	293	267	293	276	348	320	275	228	295
4B	467	329	471	434	445	470	547	486	496	357	452
5	1,348	1,165	1,488	1,218	1,232	1,400	1,375	1,345	1,163	902	1,062
6	511	458	489	524	556	500	584	557	490	416	488
7	454	438	584	685	772	797	771	765	747	743	838
8	398	330	360	343	374	473	549	489	398	342	368
9	757	628	693	612	624	718	721	721	685	511	580
10	504	504	640	486	576	632	662	533	546	433	471
11	1,898	1,846	2,179	2,088	1,997	2,022	1,923	1,921	1,505	1,321	1,538
12	976	1,030	1,040	872	954	1,324	1,370	1,251	1,017	781	916
Total	**8,832**	**8,328**	**9,955**	**9,084**	**9,327**	**10,194**	**10,502**	**10,748**	**8,675**	**7,205**	**9,790**
% Change	**-8.1%**	**-5.7%**	**19.5%**	**-8.7%**	**2.7%**	**9.2%**	**3.0%**	**2.3%**	**-19.3%**	**-16.9%**	**35.8%**

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, 2013-2016.

	First Month of Archery (Sept. 15-Oct. 15)							
Age-sex	Observation %				Harvest %			
	2013	2014	2015[A]	2016	2013	2014	2015	2016
Bucks	25%	27%	11%	19%	37%	32%	32%	33%
Does	55%	54%	51%	53%	50%	54%	55%	51%
Fawns	25%	19%	38%	28%	13%	14%	13%	16%

[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, 2014-2016.

	Deer Harvested and Observed/Hour														
	Reported on Day of Harvest														
DMZ	First Month of Archery (Sept. 15-Oct. 15)														
	2014				2015				2016				Δ[3]	Δ[3]	Δ[3]
	n	D/hr[1]	F:D	H/hr[2]	*n*	D/hr[1]	F:D[4]	H/hr[2]	*n*	D/hr[1]	F:D	H/hr[2]	D/hr[1]	F:D	H/hr
1	61	1.34	0.60	0.34	23	1.66	0.49	0.31	74	2.46	0.55	0.34	0.8	0.06	0.03
2	42	0.81	0.37	0.39	11	1.14	0.76	0.38	59	1.85	0.43	0.33	0.71	-0.33	-0.05
3	85	0.96	0.60	0.34	27	1.84	0.78	0.31	105	2.23	0.42	0.40	0.39	-0.36	0.09
4A	85	1.01	0.40	0.36	17	1.38	0.76	0.32	62	1.73	0.72	0.31	0.35	-0.04	-0.01
4B	82	1.16	0.52	0.32	46	2.00	0.74	0.40	99	2.13	0.53	0.35	0.13	-0.21	-0.05
5	201	1.03	0.55	0.34	81	1.41	0.93	0.29	200	2.02	0.61	0.32	0.61	-0.32	0.03
6	76	1.11	0.47	0.35	30	1.81	0.81	0.35	90	2.21	0.41	0.37	0.4	-0.4	0.02
7	131	0.97	0.42	0.36	72	1.92	0.86	0.37	196	2.19	0.58	0.36	0.27	-0.28	-0.01
8	90	1.10	0.56	0.32	30	1.87	0.68	0.38	102	1.94	0.51	0.29	0.07	-0.17	-0.09
9	117	1.09	0.39	0.31	29	1.56	0.70	0.33	100	2.21	0.46	0.32	0.65	-0.24	-0.01
10	84	1.09	0.40	0.35	21	1.58	0.55	0.30	99	2.20	0.43	0.36	0.62	-0.12	0.06
11	369	1.47	0.54	0.35	172	2.03	0.76	0.36	447	2.25	0.59	0.33	0.22	-0.17	-0.03
12	227	1.30	0.56	0.35	89	1.97	0.70	0.34	216	2.39	0.52	0.35	0.42	-0.18	0.01

[1] *Deer observed per hour hunted based on successful hunters.*
[2] *Deer harvested per hour hunted based on successful hunters.*
[3] *Change from 2015 to 2016.*
[4] *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 of passing on fawns remains similar (Table 8). In 2016, 52% (5,431) 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 2016.

	Muzzleloader	Shotgun/Rifle	Archery	Landowner	Crop Damage	Total
Male:Female	0.78:1	1.78:1	1.22:1	2.02:1	0.89:1	1.27:1
Antlered:Antlerless	0.46:1	1.00:1	0.87:1	1.35:1	0.68:1	0.90:1

Table 11. Sex ratios (male:female) of deer harvested during Connecticut's regulated hunting seasons, 2014-2016.

2015		2016		Males per Female			3-year Average
Males	**Females**	**Males**	**Females**	**2014**	**2015**	**2016**	**(2013-2015)**
5,153	4,368	5,758	4,545	1.1:1	1.2:1	1.3:1	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, 42% in 2015, and 35.8% in 2016. 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 increased nearly 5 times (from 200 to almost 1,000 deer annually and now has declined slightly to about 600). 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 is now averaging around 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, 2013-2016.

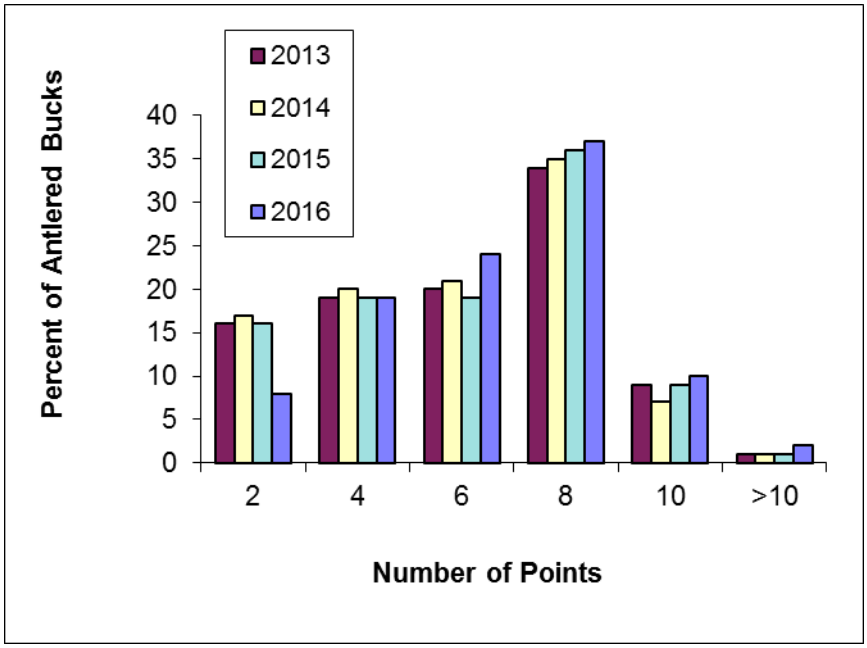


Figure 8. Comparison of trends in roadkills and the antlered and antlerless deer harvests during the archery deer season in Deer Management Zone 11, 1995-2016.

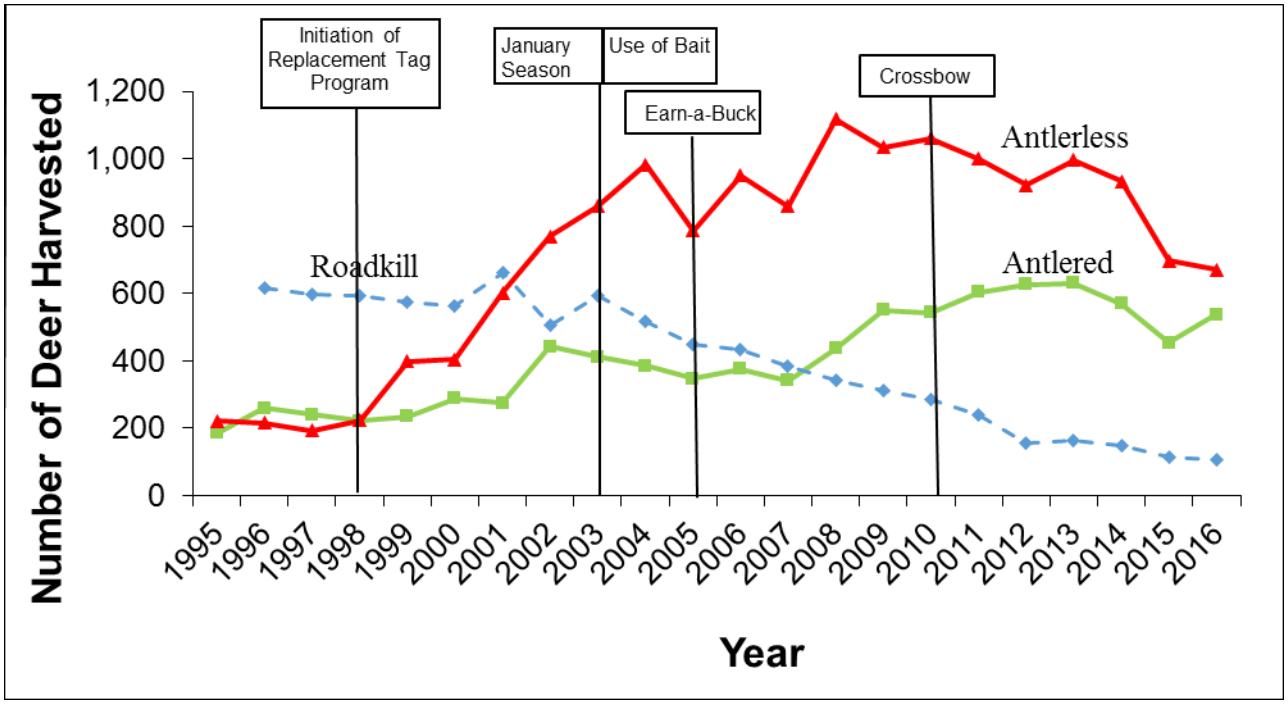
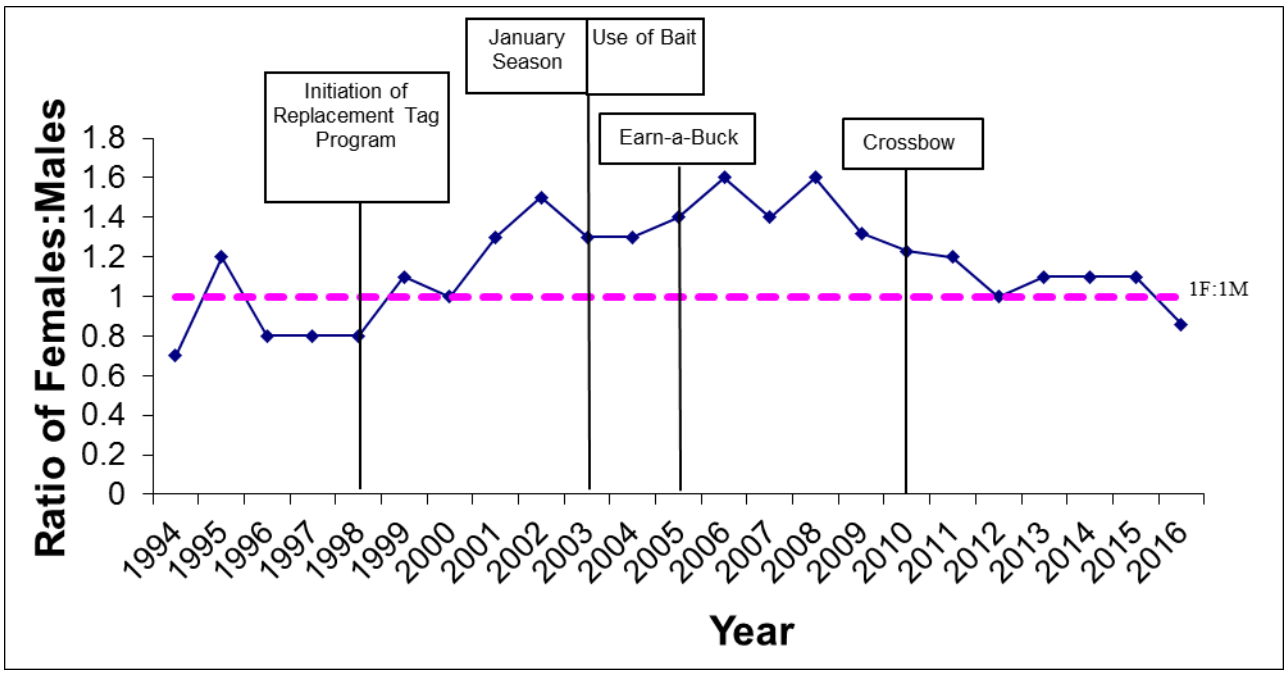


Figure 9. Changes in the sex ratios of harvested deer from Deer Management Zone 11 after implementing various management strategies during the archery season, 1994-2016.



Deer Hunter Expenditures, Effort, Venison Calculations, and Opinions

Deer hunting-related expenditures contribute significantly to Connecticut's economy. Deer permit sales generated $1,601,187 in 2013, $1,704,083 in 2014, $1,687,962 in 2015, and $1,447,074 in 2016 to the Connecticut General Fund. In addition, data collected from the annual deer hunter surveys indicated that Connecticut deer hunters spent an estimated $5,045,031 on deer hunting-related goods and services in 2016, down from the $6,831,288 spent in 2015.

In 2016, deer hunters spent a cumulative total of 394,994 days afield. Private and state land shotgun/rifle hunters used the greatest percentage of available hunting days during those seasons (34% and 39% respectively). Although bowhunters used a smaller percentage of available hunting days (23%), the archery season is much longer than the firearms season. Connecticut deer hunters collectively spent less time (37 days per deer taken) and less money ($473 per deer taken) in 2016 compared to 2015 (50 days at $750 per deer taken). In 2016, hunters harvested an estimated 533,100 pounds (average 50 lbs. of meat/hunter; 266 tons total) of venison at an estimated value of $3,598,425 ($6.75/lb.).

In 2016, a question was added to the hunter survey to assess hunter interest in various management strategies that could be used to address concerns when populations are declining. Of hunters who ranked the deer population as “slightly decreasing” or “decreasing,” (44% of all hunters), 35% favored reducing the 4-tag archery permit down to 2 tags, 35% favored a bobcat trapping season, followed by a reduction in private land shogun/rifle tags from 2 to 1 (22.8%), reducing private land muzzleloader tags down from 2 to 1 (20.7%), and 18% favored a bear hunting season. About a third of hunters preferred no tag reduction (33%).

Hunters were asked how satisfied they were with their 2016 Connecticut deer hunting experience. Excluding hunters who had no opinion (10.8%), about a third of hunters were very satisfied with their hunting experience (31.4%), a third were moderately satisfied (36.2%), and the remainder were slightly satisfied (15.4%) or not at all satisfied (17.0%).

Subscription Rates for State Land Lottery Permits

In 2016, 1,012 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 2016, the total number of lottery hunt areas was 16. Sixty-seven 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, 2016.

Deer Hunting Lottery Area	% of Hunting Slots Filled 2016
26	83
27	59[A]
28	84
51 (Yale)	66[A]
52 (Bristol Water Company)	91
53 (Maromas)	87[A]
54 (Skiff Mt.)	49[A]
56 (Centennial Watershed State Forest)	75
58 (MDC [C] Nepaug - Valentine)	49
59 (MDC Nepaug - Pine Hill)	25
60 (Tankerhoosen)	65
61 (Roraback WMA)	35
62 (Aldo Leopold)	83
63 (Mohawk-Ziegler)	70
64 (MDC Barkhamsted)	99 [A]
65(MDC Hartland)	95 [B]

[A] *Lottery for A season only.*

[B] *Lottery for B season only.*

[C] *Metropolitan District Commission.*

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 71 moose sightings (105 individuals) in 32 towns (1 unknown) in 2016 and 949 sightings over the past 20 years (Figure 10). During the 20-year period, moose sightings were reported in 86 different towns. Sightings were reported from 9 to 43 different towns each year. Moose were observed in Barkhamsted, Canaan, Colebrook, Goshen, Granby, 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 2016, an average of 1 moose was observed by hunters for every 562 hunter-days spent in the field, slightly more days than in 2015 when 1 moose was observed for every 524 hunter-days in the field. Currently, Connecticut has no open hunting season for moose.

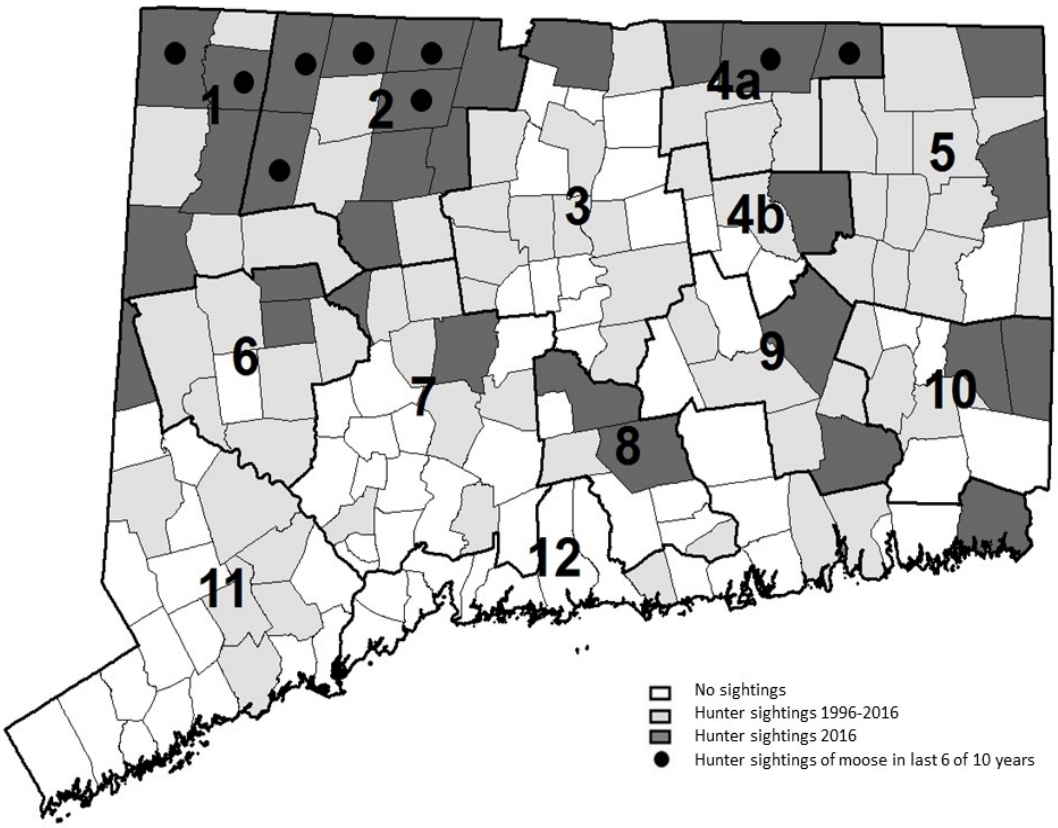
Controlled Deer Hunts

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 2016 controlled hunt, 28 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, 16 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 2016 controlled hunt, 24 deer were harvested.

Figure 10. Moose sightings reported on deer hunter surveys, 1996-2016.



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 2016 controlled hunt, 3 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 2016 controlled hunt, 92 deer were harvested.

MDC Nepaug Reservoir (Area 58 and 59): In 2007, MDC (Metropolitan District Commission) 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 2016 controlled hunt, 15 deer were harvested.

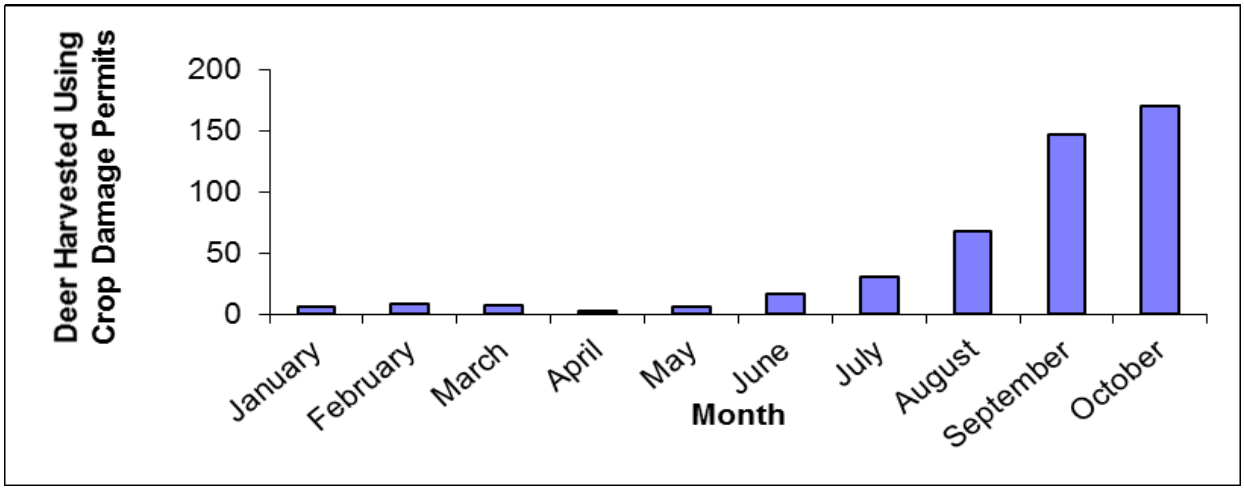
Bluff Point Coastal Reserve: Controlled hunts and DEEP deer removals at Bluff Point Coastal Reserve in Groton have been implemented over the past 18 years to reduce and maintain the deer population at about 25 animals. Since the program started in 1996, over 500 deer have been removed from Bluff Point, resulting in improved deer herd health and ecosystem stability. In December 2016, the deer population was estimated to be 44 deer. In February 2017, 18 deer were removed by DEEP personnel. After the March 2017 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 which 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 (www.ct.gov/deep/wildlife) 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 2016 calendar year, 462 deer were taken with crop damage permits (Appendix 3). From 1993-2016, annual deer harvest with crop damage permits has fluctuated

between 462 and 946 deer. Harvest in DMZ 7 accounted for 13% of deer removed with crop damage permits in 2016. Crop damage harvest increased steadily from May to October, with 69% 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, 2016.



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 2016, 1,130 non-hunting deer mortalities were reported (Appendix 4). Of those, 619 were killed in deer-vehicle collisions. This equates to an average of 1.7 deer being killed per day on Connecticut roads and highways. Deer-vehicle collisions accounted for 93% of all reported non-hunting mortality (excluding crop damage) in 2016. 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 2016 was 3,714. Nearly 14% (105) of all roadkilled deer reported in Connecticut in 2016 occurred in DMZ 11 (Fairfield County, Figure 2), which has been declining over the past few 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 legalization of baiting (Figure 8). Non-hunting mortality comprised 9.5% of the total reported deer mortality in Connecticut, including crop damage harvest (Appendix 4).

Conclusion

Over the past several decades, deer population size, human land-use practices, and public attitudes toward wildlife have changed considerably. Today, hunters may legally take up to 14 deer (including the January archery season on private land in DMZs 11 and 12) 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. Since 2010, permit issuance has continued to decline annually 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 2016 declined to levels similar to those in 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, but 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 www.ct.gov/deep/wildlife, by contacting the Wildlife Division's Deer Program via email at andrew.labonte@ct.gov 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).

As a way of thanking hunters for their support, the DEEP has been holding a special Hunting and Fishing Day in September for several years now. Below is a poster announcing the 2017 event being held at Cabela's in East Hartford.

Appendix 1. Total reported deer harvest and roadkills by town, 2016.

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Andover	31	28	6	5	0	0	0	70
Ansonia	12	2	0	0	0	0	0	14
Ashford	40	79	30	8	1	0	0	158
Avon	19	16	0	2	0	3	2	42
Barkhamsted	14	41	5	5	0	7	0	72
Beacon Falls	7	15	1	2	0	0	0	25
Berlin	56	14	3	6	8	0	0	87
Bethany	35	19	3	9	2	1	0	69
Bethel	46	12	2	1	0	0	0	61
Bethlehem	9	13	5	2	1	1	0	31
Bloomfield	22	12	2	1	0	4	1	42
Bolton	14	17	1	0	9	0	0	41
Bozrah	19	25	17	8	3	2	0	74
Branford	12	1	0	0	3	2	0	18
Bridgeport	1	0	0	0	0	0	0	1
Bridgewater	19	26	10	3	1	0	0	59
Bristol	6	7	1	0	0	4	0	18
Brookfield	60	8	1	1	0	10	0	80
Brooklyn	26	34	12	3	3	3	0	81
Burlington	21	27	1	2	0	2	0	53
Canaan	27	43	8	9	2	2	0	91
Canterbury	29	37	23	4	6	2	0	101
Canton	26	10	2	0	1	5	0	44
Chaplin	23	32	9	10	0	2	0	76
Cheshire	73	19	2	4	18	2	1	119
Chester	13	23	2	4	0	0	1	43
Clinton	22	5	1	1	0	0	0	29
Colchester	49	64	17	8	4	0	0	142
Colebrook	3	10	1	2	0	1	0	17
Columbia	31	35	7	4	2	0	0	79
Cornwall	20	36	3	4	1	4	0	68
Coventry	63	80	9	11	0	12	0	175
Cromwell	11	3	0	3	2	0	0	19
Danbury	68	13	0	2	0	5	0	88
Darien	31	0	1	0	0	4	3	39
Deep River	15	8	1	0	0	1	1	26
Derby	3	4	0	0	0	0	0	7
Durham	27	31	4	4	0	2	1	69
East Granby	6	10	2	6	0	2	0	26
East Haddam	89	89	22	12	0	5	0	217
East Hampton	28	44	11	3	2	0	1	89
East Hartford	14	3	0	1	1	2	0	21
East Haven	11	1	1	0	0	2	0	15
East Lyme	32	21	3	3	0	13	0	72
East Windsor	25	29	5	5	4	8	0	76
Eastford	14	44	9	5	0	3	0	75
Easton	85	32	3	2	10	14	2	148
Ellington	24	19	16	4	0	5	0	68

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Enfield	31	20	4	3	0	4	0	62
Essex	5	4	0	1	0	1	0	11
Fairfield	79	10	0	2	0	4	0	95
Farmington	8	11	0	0	7	16	0	42
Franklin	21	32	6	8	6	0	0	73
Glastonbury	36	28	1	5	20	22	1	113
Goshen	19	13	9	0	0	5	0	46
Granby	16	13	4	0	0	4	0	37
Greenwich	102	4	0	3	0	0	0	109
Griswold	34	44	19	6	21	1	0	125
Groton	30	7	0	4	2	6	0	49
Guilford	71	19	6	8	7	8	2	121
Haddam	60	50	16	9	1	3	1	140
Hamden	39	20	2	5	22	3	0	91
Hampton	17	44	19	4	9	0	0	93
Hartford	1	1	1	0	0	0	0	3
Hartland	11	22	3	6	0	0	0	42
Harwinton	19	37	3	4	13	8	0	84
Hebron	36	42	10	8	3	0	0	99
Kent	31	60	5	14	5	3	1	119
Killingly	33	55	17	12	5	0	0	122
Killingworth	36	34	10	7	0	9	0	96
Lebanon	58	73	33	5	24	0	0	193
Ledyard	26	31	13	11	0	10	1	92
Lisbon	10	26	15	7	0	3	0	61
Litchfield	25	42	14	6	4	5	0	96
Lyme	40	47	6	9	5	0	0	107
Madison	35	13	0	1	0	10	1	60
Manchester	14	12	0	3	0	2	0	31
Mansfield	72	62	16	6	2	23	0	181
Marlborough	27	37	19	9	0	1	0	93
Meriden	18	7	0	0	0	5	0	30
Middlebury	18	15	3	2	0	4	0	42
Middlefield	26	23	3	6	10	1	0	69
Middletown	83	43	6	4	0	3	2	141
Milford	30	6	0	1	0	3	1	41
Monroe	43	9	0	1	0	0	0	53
Montville	51	39	5	4	2	10	0	111
Morris	16	15	1	3	1	2	0	38
Naugatuck	27	11	2	3	0	0	0	43
New Britain	0	0	0	0	0	0	0	0
New Canaan	68	0	0	0	0	13	8	89
New Fairfield	43	14	0	1	0	1	0	59
New Hartford	17	33	6	2	6	1	0	65
New Haven	6	1	0	0	0	5	0	12
New London	2	0	0	0	0	3	0	5
New Milford	79	56	11	4	10	2	0	162
Newington	2	0	0	1	0	0	0	3
Newtown	165	44	3	4	17	30	1	264

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Norfolk	6	14	7	6	0	2	0	35
North Branford	36	9	2	2	0	10	0	59
North Canaan	12	7	1	3	1	0	0	24
North Haven	31	5	0	0	0	1	1	38
North Stonington	34	40	10	2	4	2	0	92
Norwalk	16	0	1	0	0	0	0	17
Norwich	29	24	3	6	0	15	2	79
Old Lyme	49	30	1	8	0	1	0	89
Old Saybrook	10	2	1	0	0	6	1	20
Orange	48	4	0	1	0	4	0	57
Oxford	31	23	3	7	2	2	0	68
Plainfield	35	44	11	13	3	2	0	108
Plainville	3	4	0	1	0	0	0	8
Plymouth	13	20	4	3	1	1	0	42
Pomfret	48	61	14	10	2	5	0	140
Portland	24	21	5	7	4	12	0	73
Preston	38	27	11	4	8	0	0	88
Prospect	27	6	1	4	0	16	0	54
Putnam	17	18	3	2	3	3	0	46
Redding	90	31	0	3	11	0	0	135
Ridgefield	151	36	0	9	0	9	2	207
Rocky Hill	8	7	2	0	4	0	0	21
Roxbury	16	30	3	3	2	0	0	54
Salem	28	34	8	8	2	2	0	82
Salisbury	65	59	6	15	14	5	0	164
Scotland	32	33	10	8	0	2	0	85
Seymour	31	7	1	1	0	5	1	46
Sharon	44	80	8	13	5	6	0	156
Shelton	57	6	2	1	17	1	0	84
Sherman	43	15	1	5	2	3	0	69
Simsbury	23	3	0	0	0	2	0	28
Somers	31	18	1	6	1	4	0	61
South Windsor	23	16	3	3	2	1	0	48
Southbury	44	16	6	3	0	11	0	80
Southington	33	12	2	3	2	3	0	55
Sprague	16	18	10	4	2	2	0	52
Stafford	56	49	24	11	1	2	1	144
Stamford	43	2	0	0	0	0	0	45
Sterling	30	20	15	4	0	1	1	71
Stonington	38	39	3	7	7	8	2	104
Stratford	18	3	3	1	0	1	1	27
Suffield	20	32	5	7	0	5	0	69
Thomaston	11	11	5	0	1	4	0	32
Thompson	52	59	19	6	4	2	0	142
Tolland	49	32	8	2	6	10	1	108
Torrington	20	8	2	1	0	8	0	39
Trumbull	34	0	0	0	0	1	0	35
Union	16	21	6	1	0	4	0	48
Vernon	18	10	1	2	0	2	0	33

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Voluntown	42	52	9	6	12	2	0	123
Wallingford	37	21	1	6	4	4	2	75
Warren	11	28	8	4	5	1	0	57
Washington	20	32	6	7	25	11	0	101
Waterbury	17	4	0	1	0	2	0	24
Waterford	60	34	9	4	0	2	0	109
Watertown	25	16	3	0	0	1	0	45
West Haven	15	0	0	0	3	0	0	18
West Hartford	0	0	0	0	0	3	0	3
Westbrook	8	17	1	1	0	1	0	28
Weston	34	15	1	0	0	1	0	51
Westport	10	0	0	0	0	0	0	10
Wethersfield	0	0	0	0	6	1	0	7
Willington	28	30	7	4	0	7	0	76
Wilton	89	21	0	7	0	8	0	125
Winchester	7	10	6	2	0	3	0	28
Windham	25	33	4	6	1	0	0	69
Windsor	11	4	4	0	7	2	1	29
Windsor Locks	4	0	0	0	1	0	0	5
Wolcott	8	5	1	2	0	1	0	17
Woodbridge	34	8	0	1	0	6	1	50
Woodbury	19	23	2	5	1	5	0	55
Woodstock	68	68	28	11	0	3	0	178
Total	**5,286**	**3,857**	**875**	**644**	**462**	**619**	**49**	**11,792**

Appendix 2. Sex ratios (male:female) of deer harvested during Connecticut's regulated hunting seasons, 2014-2016.

	2014		2015		2016		3-year Average (2014-2016)		Males per Female		
Season	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**	**2014**	**2015**	**2016**
Archery											
State Land	332	283	302	253	358	305	331	280	1.17	1.19	1.17
Private Land	2,278	2,469	2,025	1,947	2,425	2,000	2,243	2,139	0.92	1.04	1.21
Subtotal	**2,610**	**2,752**	**2,327**	**2,200**	**2,783**	**2,305**	**2,573**	**2,419**	**0.95**	**1.06**	**1.21**
Muzzleloader											
State Land	40	52	40	38	38	37	39	42	0.77	1.05	1.03
Private Land	239	423	157	235	243	325	213	328	0.57	0.67	0.75
Subtotal	**279**	**475**	**197**	**273**	**281**	**362**	**252**	**370**	**0.59**	**0.72**	**0.78**
Shotgun/Rifle											
State Land	415	219	365	187	457	179	412	195	1.89	1.95	2.55
Private Land	1,895	1,554	1,607	1,203	1,989	1,187	1,830	1,315	1.22	1.34	1.68
Subtotal	**2,310**	**1,773**	**1,972**	**1,390**	**2,446**	**1,366**	**2,243**	**1,510**	**1.30**	**1.42**	**1.79**
Landowner	648	429	451	250	582	287	560	322	1.51	1.80	2.03
Total	**5,847**	**5,429**	**4,947**	**4,113**	**6,092**	**4,320**	**5,629**	**4,621**	**1.08**	**1.20**	**1.41**

Appendix 3. Deer harvested using crop damage permits in Connecticut's Deer Management Zones, 2004-2016.

	Year												
Zone	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
1	98	82	64	58	59	55	45	37	67	44	39	32	37
2	24	18	18	17	17	12	19	17	25	15	16	15	20
3	109	105	71	49	76	101	70	99	70	97	99	30	58
4A	9	25	14	21	21	6	4	10	15	16	8	10	8
4B	46	38	32	33	51	33	39	28	41	56	55	24	13
5	124	129	95	68	119	95	57	93	87	88	77	55	37
6	56	82	77	54	90	58	78	56	74	62	89	49	41
7	90	62	69	89	114	93	88	123	127	118	110	72	60
8	53	37	47	33	42	33	32	28	36	40	41	11	11
9	43	53	48	30	69	79	55	56	56	77	65	35	40
10	36	50	66	51	82	76	75	104	90	83	90	53	53
11	159	114	109	116	111	106	118	93	113	91	79	45	57
12	99	47	45	48	32	33	35	60	63	44	43	30	27
Total	**946**	**842**	**755**	**667**	**883**	**780**	**715**	**804**	**864**	**831**	**812**	**464**	**462**

Appendix 4. Non-hunting deer mortality reported in Connecticut, 2003-2016.

Cause of Death	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Road	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	619
Dog	11	2	3	3	4	3	1	1	0	2	0	5	0	0
Unknown	217	183	183	117	162	72	92	49	82	58	89	59	62	49
Illegal	5	6	2	3	1	9	3	10	4	6	4	2	2	0
Crop Damage	831	946	842	755	667	883	780	715	804	864	831	812	464	462
Total	**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**	**1,130**
Non-hunting: Harvest	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	1:9.4
% Mortality*	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	9.5
% of Harvest	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	10.6

** 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, 2012-2016.

						Five-year		Habitat	Roadkills/Sq. Mile		
Zone	**2012**	**2013**	**2014**	**2015**	**2016**	**Total**	**Zonal %**	**(sq. miles)**	**2014**	**2015**	**2016**
1	60	71	70	18	26	245	5.1	344.1	0.20	0.05	0.08
2	58	74	55	44	46	277	5.7	409.85	0.13	0.11	0.11
3	141	166	125	112	89	633	13.1	272.1	0.46	0.41	0.33
4A	59	67	42	28	32	228	4.7	213.1	0.20	0.13	0.15
4B	77	87	41	30	37	272	5.6	120.0	0.34	0.25	0.31
5	120	60	84	49	37	350	7.2	444.9	0.19	0.11	0.08
6	75	68	52	36	33	264	5.5	259.1	0.20	0.14	0.13
7	130	116	99	119	74	538	11.1	370.9	0.27	0.32	0.20
8	11	44	9	15	11	90	1.9	167.6	0.05	0.09	0.07
9	114	99	83	29	15	340	7.0	277.8	0.30	0.10	0.05
10	45	53	70	61	35	264	5.5	243.6	0.29	0.25	0.14
11	155	163	150	116	105	689	14.2	290.76	0.52	0.40	0.36
12	131	143	99	92	79	544	11.2	356.4	0.28	0.26	0.22
Total	**1,176**	**1,211**	**1,081**	**749**	**619**	**4,836**	**100.0**	**3,770.2**	**0.29***	**0.20***	**0.16***

** These numbers are averages, not totals.*

Appendix 6. Deer harvest on state Deer Lottery Hunting Areas (DLHA), 2016.

DLHA	Shotgun	Muzzleloader	Archery	Total
26	2	0	2	4
27	2	1	2	5
28	3	0	7	10
51	28	0	0	28
52	16	0	0	16
53	10	2	14	26
54	1	0	2	3
56	45	0	43	88
58	11	0	0	11
59	3	0	1	4
60	4	0	7	11
61	6	2	5	13
62	3	0	2	5
63	1	0	1	2
64	28	0	0	28
65	10	0	0	10
66	0	0	8	8
Total	**173**	**5**	**94**	**272**

Appendix 7. Archery harvest on state areas (archery only areas), 2016.

Name of Area	Total Deer	F	M
Aldo Leopold WMA	2	0	2
Algonquin State Forest	5	2	3
American Legion State Forest	3	0	3
Assekonk Swamp WMA	0	0	0
Babcock Pond WMA	3	1	2
Barber Pond WMA	2	1	1
Barn Island WMA	8	2	6
Bartlett Brook WMA	1	0	1
Bear Hill WMA	3	1	2
Beaver Brook State Park	0	0	0
Bennett's Pond State Park	2	1	1
Bigelow Hollow State Park	1	1	0
Bishops Swamp WMA	6	5	1
Black Pond WMA	2	1	1
Black Rock Lake	1	1	0
Bloomfield Flood Control Area (Site 1)	3	1	2
Camp Columbia	2	1	1
Cedar Swamp WMA	1	0	1
Centennial Watershed SF	43	18	25
Centennial Watershed SF (Canaan Block)	0	0	0
Centennial Watershed State Forest (BHC)	5	3	2
CL&P (borders Newgate WMA)	3	1	2
Cockaponset State Forest	55	24	31
Collis P. Huntington State Park	8	6	2
Cromwell Meadows WMA	6	2	4
Durham Meadows WMA	1	0	1
East Swamp	7	2	5
East Twin Lakes Water Access Area	7	5	2
Eight Mile River WMA	1	1	0
Ellithorpe Flood Control Area	3	2	1
Enders State Forest	0	0	0
Franklin Swamp WMA	3	1	2
George C. Waldo State Park	0	0	0
Goshen WMA	0	0	0
Great Swamp Flood Control Area	3	2	1
Hancock Brook Lake	0	0	0
Harkness/Verkades	17	12	5
Higganum Meadows WMA	7	2	5
Higganum Reservoir	1	1	0
Housatonic River WMA	8	4	4

Name of Area	Total Deer	F	M
Housatonic State Forest	1	0	1
James V. Spignesi WMA	0	0	0
John A. Minetto State Park	2	1	1
Killingly Pond State Park	1	1	0
Kollar WMA	5	1	4
Larson Lot WMA	2	1	1
Lebanon Coop Mgmt. Area	2	2	0
Little River Fish and Wildlife Area	0	0	0
Mad River Dam Flood Control Area	0	0	0
Mansfield Hollow Lake	8	7	1
Mansfield State-Leased Field Trial Area	4	3	1
Mattatuck State Forest	6	0	6
MDC-Colebrook Reservoir/Hogback Dam	1	0	1
MDC - Valentine Block	0	0	0
MDC Greenwoods	4	2	2
Meadow Brook WMA	3	1	2
Menunketesuck WMA	2	1	1
Meshomasic State Forest	16	7	9
Messerschmidt Pond WMA	5	3	2
Millers Pond	1	1	0
Mohawk State Forest-Clark Pond	1	0	1
Mohawk State Forest-Ziegler/Johnson Tract	1	1	0
Mohegan State Forest (including Waldo Tract)	2	0	2
Mono Pond	1	1	0
Mount Riga State Park	4	1	3
Nassahegon State Forest	3	2	1
Natchaug State Forest	31	15	16
Nathan Hale State Forest Mgmt. Area	1	0	1
Naugatuck State Forest	10	4	6
Naugatuck State Forest (Great Hill Block)	3	2	1
Naugatuck State Forest (Quillinan Reservoir Block)	7	2	5
Nehantic State Forest	12	6	6
Nepaug State Forest	0	0	0
Newgate WMA	3	1	2
Nipmuck State Forest	12	4	8
Northfield Brook Lake	0	0	0
Nott Island	2	1	1
Maromas Coop. WMA	14	7	7
Skiff Mtn. Coop. WMA	2	0	2
Nye Holman State Forest	7	1	6
Pachaug State Forest	58	28	30

Name of Area	Total Deer	F	M
Paugnut State Forest	3	1	2
Paugussett State Forest	4	1	3
Peoples State Forest	**0**	**0**	**0**
Pease Brook WMA	**1**	**1**	**0**
Pomeroy State Park	9	4	5
Pootatuck State Forest	3	2	1
Quaddick State Forest	5	2	3
Quinebaug River WMA	2	1	1
Quinebaug River WMA (Aspinook Pond)	0	0	0
Quinnipiac River Marsh	5	3	2
Quinnipiac River State Park	13	8	5
Red Cedar Lake	0	0	0
Robbins Swamp WMA	5	1	4
Roraback WMA	5	2	3
Rose Hill WMA	6	1	5
Ross Marsh WMA	0	0	0
Ross Pond State Park	3	0	3
Salmon River Cove & Haddam Neck	0	0	0
Salmon River State Forest	22	10	12
Scantic River State Park	9	7	2
Selden Island State Park	3	1	2
Sessions Woods WMA	0	0	0
Shenipsit State Forest	17	10	7
Silvio O. Conte NWR	2	0	2
Simsbury WMA	7	2	5
Stones Ranch Military Reservation	0	0	0
Suckerbrook Flood Control	0	0	0
Sugarbrook Field Trial Area	0	0	0
Suffield WMA	1	0	1
Sunnybrook State Park	0	0	0
Talbot WMA	8	3	5
Tankerhoosen WMA	7	2	5
Thomaston Dam	6	5	1
Topsmead State Forest	0	0	0
Trout Brook Valley State Park	2	1	1
Tunxis State Forest	8	0	8
Wangunk Meadows	0	0	0
West Thompson Dam	7	3	4
Whiting River Flood Control Area	0	0	0
Wood Creek Flood Control Area	0	0	0
Wopowog WMA	5	1	4

Name of Area	Total Deer	F	M
Wyantenock State Forest	1	0	1
Zemko Pond WMA	1	0	1