2017 Connecticut Deer Program Summary

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Introduction

This booklet is the 36th 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 2017, 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 (EAB) (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 (EAB). 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 DMZs 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 project evaluating accuracy of various population estimation techniques began in 2017 and is expected to be completed in 2019.

In early September 2017, a concerned hunter called in stating he had found several dead deer along a small body of water adjacent to the Connecticut River in Portland. The deer were in various stages of decay along the banks of the water or floating in the water. Several additional deer were found less than a mile from that location at another small body of water. Additional reports of sick deer continued to come in through October. Several fresh carcasses were submitted for testing with 3 deer testing positive for Epizootic Hemorrhagic Disease (EHD). EHD is one of the most important infectious diseases affecting white-tailed deer and spreads by a bite from an infected midge. However, EHD does not infect humans and people are not at risk by handling infected deer, eating venison from infected deer, or being bitten by infected midges. Additional information about EHD can be found on the DEEP website at http://www.ct.gov/deep/cwp/view.asp?a=4918&q=597280.

The Connecticut Department of Energy and Environmental Protection Wildlife Division (DEEP) Division expects to be collecting deer heads to test for chronic wasting disease (CWD) and blood samples for EHD (from towns along the Connecticut River) during the 2018 hunting season. Anyone interested in donating deer heads or blood samples 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 2017, the DEEP collected 360 CWD samples from throughout the state, all of which tested negative. Since the beginning of collection efforts in 2003, over 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 (https://eregulations.ct.gov/eRegsPortal/Browse/RCSA?id={1ED8C39C-FD16-40F5-B052-B02CE60CE7C0}&content=deer) 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 2017 hunting season, 12,080 deer were legally harvested and reported (Table 1; Figure 1). This represents a 13.3% increase from the 2016 harvest. Harvest by crossbow hunters comprised 41%, 54%, and 63% of the January harvest in 2016, 2017, and 2018.

In 2017, 1,873 deer were harvested during the first 4 days of the shotgun/rifle season, a 6% increase from 2016 (1,772). Using the telephone and online reporting systems, the reported shotgun/rifle harvest was 4,281 deer in 2017, an 11% increase from 2016 (3,857). In 2017, the landowner harvest was 1,079, a 23.3% increase from 2016 (875). 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 2016 and slightly cooler temperatures.

The antlerless and EAB tag harvest was higher in 2017 (403) than in 2016 (379). Deer harvested under the replacement antlerless and EAB programs (403) contributed to 15.8% of the total deer harvest on private land in DMZs 11 and 12. Archery and shotgun/rifle seasons accounted for 49.0% and 35.4% of all deer taken in 2017, which is the fourth consecutive year the archery harvest has exceeded the shotgun/rifle harvest. Landowners and muzzleloader hunters accounted for 8.9% and 6.7% of all deer taken in 2017. Harvest varied considerably by season and town (Appendix 1). The overall increase in the 2017 deer harvest was likely attributed to a low harvest during the 2016 season, previous 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 59 deer (Table 1).

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 permit issuance levels in 1989, while issuance in 2017 was even lower (Figure 1). Issuance for private land muzzleloader permits had the greatest one-year decline (12.5%), followed by state land A shotgun (5.7%). Alternatively, archery permit issuance increased to a record high of 17,029 in 2017. Overall, shotgun/rifle hunters purchased the largest percentage of permits (37.6%), followed by archery hunters (36.6%), muzzleloader hunters (18.0%), and landowners (7.9%). Seventy percent of firearms deer permits were issued for use on private land and the remaining 30% were issued for state-managed lands. During the eighth year of authorizing the use of revolvers for deer hunting, 853 hunters took advantage of this opportunity, a 5.7% increase in issuance from 2016 (807).

Table 1. Deer harvested during Connecticut's regulated hunting seasons, 2016-2017.

Season	Harvest 2016	Harvest 2017	3-year Average Harvest (2015-2017)	% of Total 2017	% Change from 2016 to 2017	% Change 3-year Average to 2017
Archery						
State Land	663	551	619	4.6%	-16.9%	-10.9%
Private Land	4,425	5,075	4,272	42.0%	14.7%	18.8%
Replacement Antlerless[A, B]	174	171	188	1.4%	-1.7%	-9.2%
Either-sex Tag[A, B]	93	116	91	1.0%	24.7%	27.0%
January[E]	198	284	205	2.4%	43.4%	38.8%
Replacement Antlerless[A, B]	13	21	15	0.2%	61.5%	43.2%
Either-sex Tag[A, B]	0	3	0	0.0%	0.0%	800.0%
Crossbow[B]	107	179	110	1.5%	67.3%	62.2%
Subtotal	5,286	5,910	5,095	48.9%	11.8%	16.0%
Muzzleloader						
State Land	75	137	86	1.1%	82.7%	59.9%
Private Land	569	673	543	5.6%	18.3%	23.9%
Replacement Antlerless[A, C]	6	15	9	0.1%	150.0%	73.1%
Either-sex Tag[A, C]	5	9	5	0.1%	80.0%	80.0%
Subtotal	644	810	629	6.7%	25.8%	28.8%
Shotgun/Rifle						
State Land A	573	623	550	5.2%	8.7%	13.3%
State Land B	84	129	70	1.1%	53.6%	85.2%
Private Land	3,200	3,529	3,159	29.2%	10.3%	11.7%
Replacement Antlerless[A, D]	30	13	23	0.1%	-56.7%	-43.5%
Either-sex Tag[A, D]	58	55	52	0.5%	-5.2%	5.8%
Revolver[D]	7	7	5	0.1%	0.0%	40.0%
Muzzleloader[D]	16	24	23	0.2%	50.0%	5.9%
Subtotal	3,857	4,281	3,778	35.4%	11.0%	13.3%
Youth Hunting Days[D]	65	32	59	0.3%	-50.8%	-45.8%
Landowner	875	1,079	888	8.9%	23.3%	21.5%
Total	**10,662**	**12,080**	**10,390**	**100.0%**	**13.3%**	**16.3%**

[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, 1975-2017.
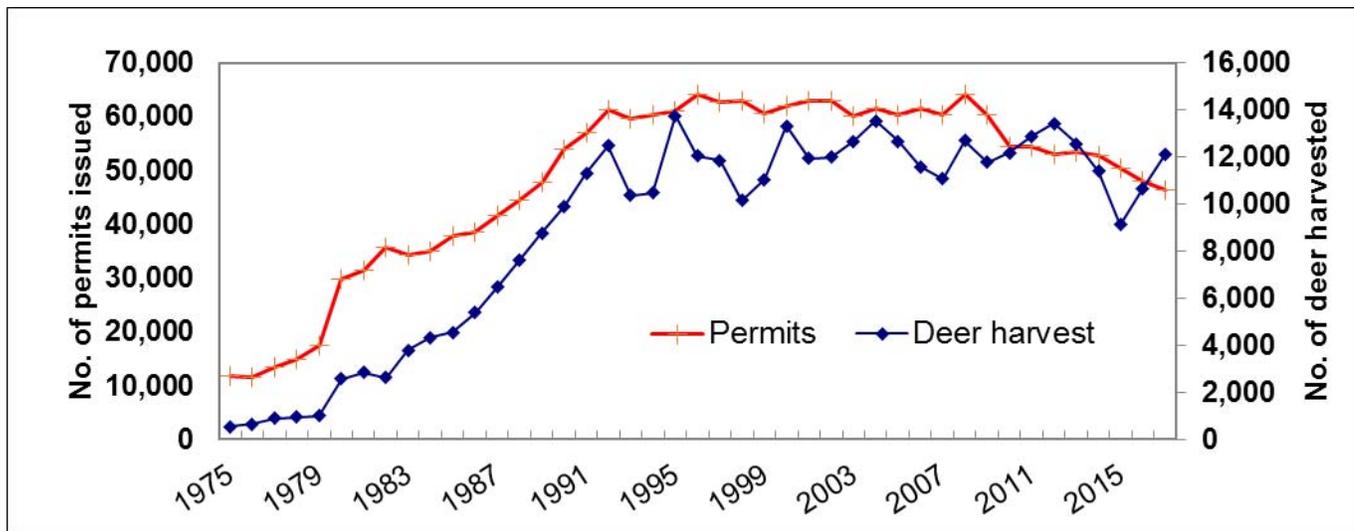
Table 2. Deer hunting permits issued in Connecticut for all regulated hunting seasons, 2015-2017.

Season	Permits 2015	Permits 2016	Permits 2017	3-Year Average Permits 2014-2016	% of Total 2017	% Change 2016 to 2017	% Change 3-year Avg. to 2017
Archery	16,975	16,864	17,029	16,814	36.6%	1.0%	1.3%
Muzzleloader							
State Land	3,139	2,864	2,892	3,114	6.2%	1.0%	-7.1%
Private Land	6,447	6,262	5,478	6,774	11.8%	-12.5%	-19.1%
Subtotal	9,586	9,126	8,370	9,888	18.0%	-8.3%	-15.4%
Shotgun/Rifle							
State Land A*	4,755	4,534	4,277	4,786	9.2%	-5.7%	-10.6%
State Land B*	1,615	1,615	1,583	1,670	3.4%	-2.0%	-5.2%
Private Land	13,760	12,052	11,629	13,378	25.0%	-3.5%	-13.1%
Subtotal	20,130	18,201	17,489	19,834	37.6%	-3.9%	-11.8%
Revolver[A]	820	807	853	800	1.8%	5.7%	6.6%
Landowner	3,818	3,767	3,676	3,898	7.9%	-2.4%	-5.7%
Total	**50,509**	**47,958**	**46,564**	**50,434**	**100.0%**	**-2.9%**	**-7.7%**

* 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 exceeded 35% from 2010 through 2014 (35.2% in 2010; 38.0% in 2011; 37.7% in 2012; 38.3% in 2013; and 35.7% in 2014), but declined during the 2015 (26.9%) and 2016 (31.3%) hunting seasons. This year, archery success nearly reached 35% (34.7%). Success rates in 2017 increased for all hunting seasons compared to 2016 and the 3-year average. In 2017, archery hunters had the highest annual success rate (34.7%), followed by private land shotgun/rifle hunters (30.3%) and landowners (29.4%). Success rate for the combined muzzleloader seasons was 9.7%. 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, 2016-2017.

Season	2016	2017	3-year Avg. Success Rate (2014-2016)	Difference from 2016	Difference from 3-year Avg.
Archery					
Combined[1]	31.3%	34.7%	31.3%	3.4%	3.4%
Muzzleloader					
State Land	2.6%	4.7%	2.8%	2.1%	2.0%
Private Land	9.1%	12.3%	8.2%	3.2%	4.1%
Combined	7.1%	9.7%	6.5%	2.6%	3.2%
Shotgun/Rifle					
State Land A	12.6%	14.6%	11.5%	1.97%	3.1%
State Land B	5.2%	8.1%	4.2%	2.95%	3.9%
Private Land	26.6%	30.3%	24.5%	3.75%	5.8%
Combined	21.2%	24.5%	19.5%	3.28%	4.9%
Landowner	23.2%	29.4%	22.8%	6.15%	6.6%
Average[2]	**22.2%**	**26.1%**	**21.1%**	**3.85%**	**5.0%**

[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 7 years (2011-2017), record bow harvests have been recorded (5,211; 5,413; 6,046; 5,433; 4,566; 5,286; 5,910 respectively). For the fifth consecutive year, the bow harvest (5,910) exceeded the shotgun/rifle harvest (3,529). Sixty-five percent (3,856 total – 3,386 private, 470 state) of the total archery harvest was taken during the early archery season (September 15 to November 14); 18% (1,074 total – 1,023 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); 12% (696 – 666 private, 30 state) was taken during the muzzleloader season (December 6 to December 31); and 5% (284) was taken during the January season open in DMZs 11 and 12 on private land only (January 1-31, 2018). A total of 630 deer were taken on state areas (Appendix 2). During the 2017 archery season, hunters were allowed to hunt on Sundays on private land. The Sunday harvest comprised 11% of the entire archery harvest and 14% during the January season. Comparing the percent of archery deer harvested on weekends from 2014 (29%; Saturday only) to 2015 (37%; Saturday and Sunday), 2016 (35%; Saturday and Sunday), and 2017 (37%; 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%; 2017, 38%) when archery hunting was opened up on Sundays in select zones (all DMZs except 2, 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 2017 was 1.6, which was higher than 2016 (1.1), 2015 (0.89), and 2014 (1.1). Number of fawns per doe in 2017 (0.92) was higher than in 2016 (0.48) and 2015 (0.73), while number of bucks per doe in 2017 (0.30) was lower than 2016 (0.48), but higher than 2015 (0.22).

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 (DMZs; 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, 2017.
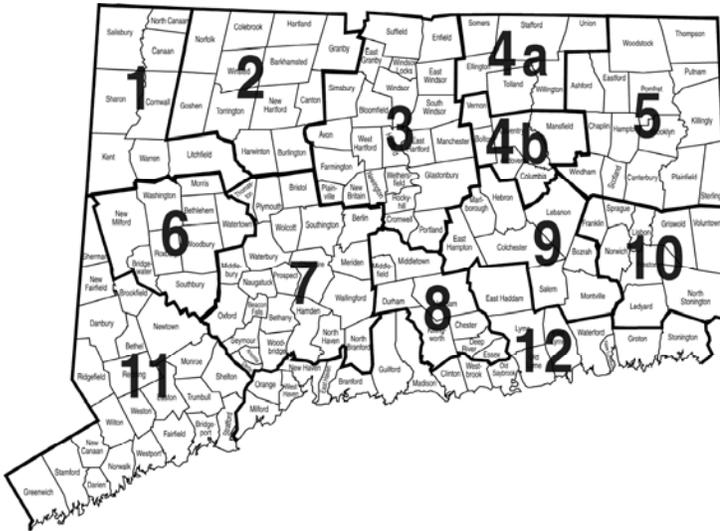
Hunter Perceptions of Population Trends

In 2017, 13,389 deer hunters were sent an email and asked to complete an online hunter survey. A total of 3,861 hunters responded for a 28% 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). Thirty-five percent of the hunters who responded to the survey believed that the population was declining, 49% believed it was stable, and 16% believed it was increasing. DMZs 4A and 4B had the highest average rank (3.0 and 3.1) (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 higher in 2017 than 2016. Hunters reported 2,251 bear sightings in 100 towns in 2017 at a rate of one bear sighting per 27 days spent afield (1,848 bear sightings in 126 towns in 2016, at a rate of one bear sighting per 32 days spent afield). Hunters reported 3,249 bobcat sightings in 151 towns in 2017 at a rate of one bobcat sighting per 18.7 days spent afield (2,690 bobcat sightings in 161 towns in 2016, at a rate of one bobcat sighting per 22 days spent afield). Hunters reported 11,025 coyote sightings in 159 towns in 2017 at a rate of one coyote per 5.5 days spent afield (9,670 coyote sightings in 169 towns in 2016 at a rate of one coyote per 6.1 days spent afield).

Figure 3. Perception of zonal deer population trends (average rank) by Connecticut's deer hunters, 2015-2017.
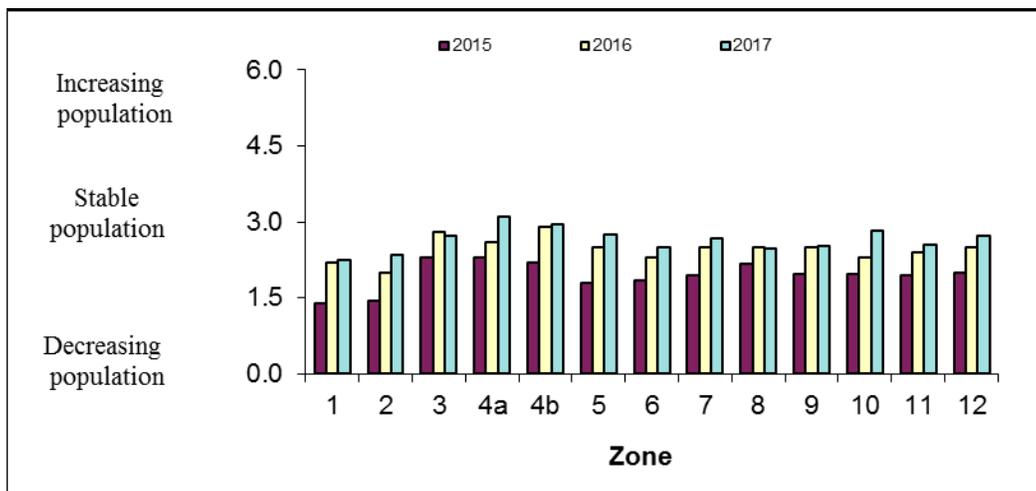
Zonal Deer Management

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 2017. 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, 1996-2017.
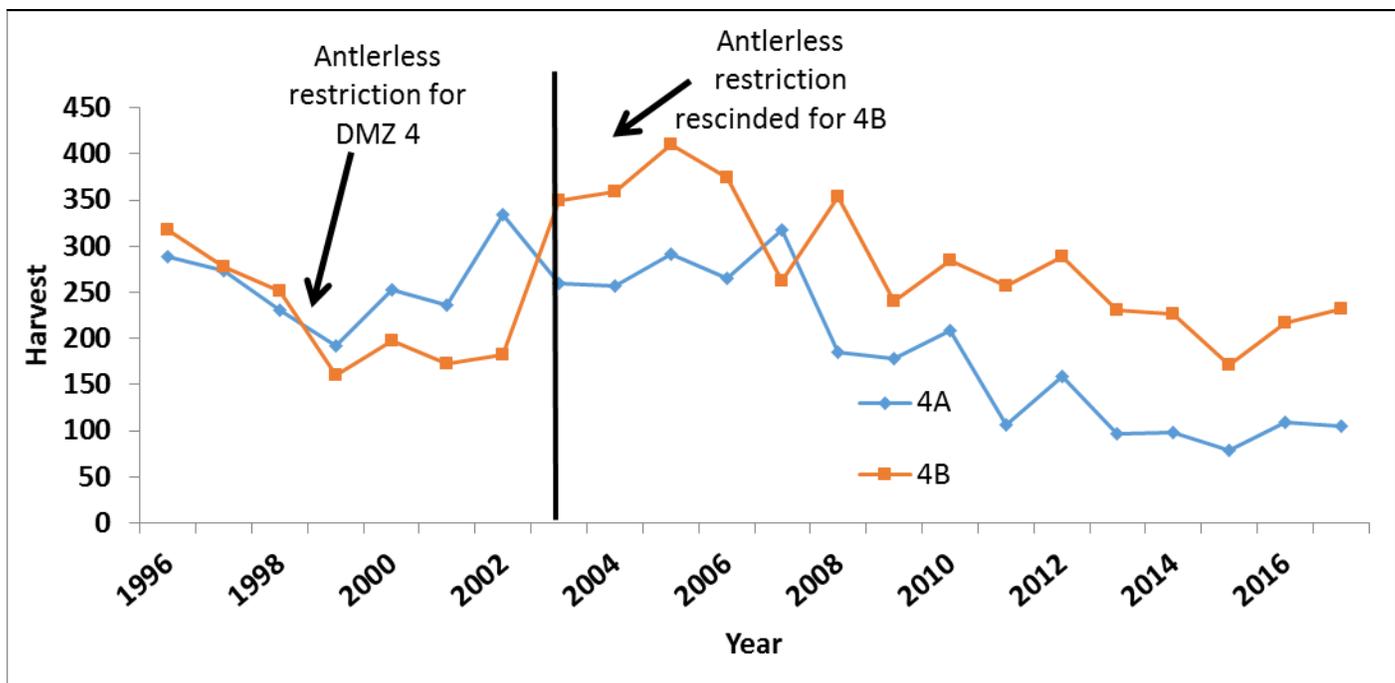
Insight into Deer Hunter Success Rates by Zone

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 2017 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 (42%) occurred in four zones (2, 5, 9 and 12). Highest private land deer harvests were reported for DMZs 5, 9, 10 and 12. Zone 4B had the highest deer harvest per square mile (1.9) and DMZ 4B had the greatest density of hunters (5.1 per square mile). Hunter success rate was highest in zone 5 (42%), while success in zones 2 and 4A were the lowest (17% and 19%). The 3-year trend in hunter success rates by zone has increased over the past 3 years (Table 5). Although hunter success has been variable due to the abundance of acorns, four DMZs (3, 4B, 5, 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 (35%) hunters harvested 2 or more deer during the regular archery season. Bowhunter success rates were highest in zones 4B, 5, 10, 11, and 12 (Table 6). 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 increasing the population and resulting in increased success rates thereafter. 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 nearly 2 times higher than all other zones.

Table 4. Zonal hunter numbers, harvest, and success rates for private land during the 2017 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	143	8.4%	975	299	344.59	0.9	2.8	31%
2	151	8.9%	1,029	170	410.69	0.4	2.5	17%
3	100	5.9%	682	249	273.33	0.9	2.5	37%
4A	81	4.7%	552	105	213.5	0.5	2.6	19%
4B	91	5.3%	620	232	120.66	1.9	5.1	37%
5	234	13.7%	1,595	677	445.94	1.5	3.6	42%
6	111	6.5%	757	230	260.03	0.9	2.9	30%
7	120	7.0%	818	228	373.08	0.6	2.2	28%
8	90	5.3%	613	170	169.11	1.0	3.6	28%
9	177	10.4%	1,207	339	279.39	1.2	4.3	28%
10	118	6.9%	804	315	244.36	1.3	3.3	39%
11	133	7.8%	907	193	291.53	0.7	3.1	21%
12	157	9.2%	1,070	322	358.39	0.9	3.0	30%
Total	**1,706**	**100.0%**	**11,629**	**3,529**	**3,785**	**0.9**	**3.1**	**30%**

[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, 2015-2017.

Zone	Area (sq. miles)	Deer Harvest/Sq. Mile			Hunters/Sq. Mile			Hunter Success Rate (%)		
		2015	2016	2017	2015	2016	2017	2015	2016	2017
1	344.6	0.8	0.9	0.9	3	3.2	2.8	26	27	31
2	410.7	0.4	0.3	1.3	2.5	2.7	2.5	15	13	17
3	273.3	0.7	0.8	0.9	3.3	2.6	2.5	21	29	37
4A	213.5	0.4	0.5	0.8	3.7	2.9	2.6	10	18	19
4B	120.7	1.4	1.8	0.8	5.1	5.6	5.1	28	32	37
5	445.9	1	1.3	0.8	4.4	3.5	3.6	23	35	42
6	260.0	0.8	0.8	1.0	3.7	3.2	2.9	20	26	30
7	373.1	0.6	0.6	1.0	2.9	2.1	2.2	20	29	28
8	169.1	0.8	0.9	0.9	4.6	3.5	3.6	17	26	28
9	279.4	1	1.1	0.9	4.7	4.6	4.3	21	23	28
10	244.4	1	1	1.0	4.2	3.2	3.3	23	30	39
11	291.5	0.7	0.7	1.0	3.7	3.1	3.1	18	22	21
12	358.4	0.7	0.9	0.8	3.4	3	3.0	21	29	30
Total	**3,785.0**	**0.7**	**0.8**	**0.9**	**3.6**	**3.2**	**3.1**	**20**	**26**	**30**

Table 6. Zonal comparisons of archery season success rates, 2017.

Zones	Zone Hunted Archery[A]	% of Hunters Answered Question[A]	Estimated # of Archery Hunters	Harvest	Hunter Success Rate %
1	114	4.7%	794	243	30.6
2	170	7.0%	1,184	213	18.0
3	181	7.4%	1,261	306	24.3
4A	118	4.8%	822	243	29.6
4B	85	3.5%	592	253	42.7
5	232	9.5%	1,616	536	33.2
6	130	5.3%	905	263	29.0
7	284	11.6%	1,978	651	32.9
8	117	4.8%	815	267	32.8
9	177	7.2%	1,233	322	26.1
10	120	4.9%	836	281	33.6
11	471	19.3%	3,280	1307	39.8
12	246	10.1%	1,713	763	44.5
Total	**2,445**	**100.0%**	**17,029**	**5,648**	**33.2**

[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 2017, 40.7% of the hunters who responded to the survey ranked the fall acorn crop as scarce, 59.3% as moderate, and 15.2% as abundant. DMZs 1, 2, 6, and 7 had the highest average rank (3.01-3.39), while DMZs 5, 8, 9, and 10 had the lowest average ranks (1.92-2.08) (Figure 5). On a scale of 0-6, the average rank statewide was 2.62. A large gypsy moth outbreak caused substantial oak damage that could have long-term implications on acorn production for areas of eastern Connecticut (DMZs 5, 9, and 10).

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 4 years.

Figure 5. Perception of acorn crops (average rank) by Connecticut's deer hunters, 2014-2017.
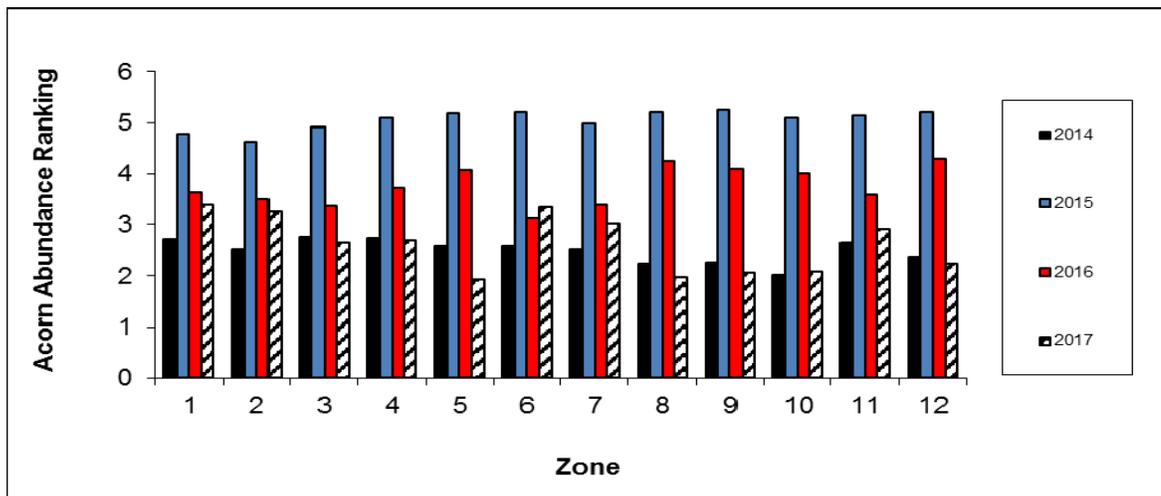
Figure 6. Relationship between private land shotgun/rifle hunter success rates and fall acorn productivity, 1993-2017.
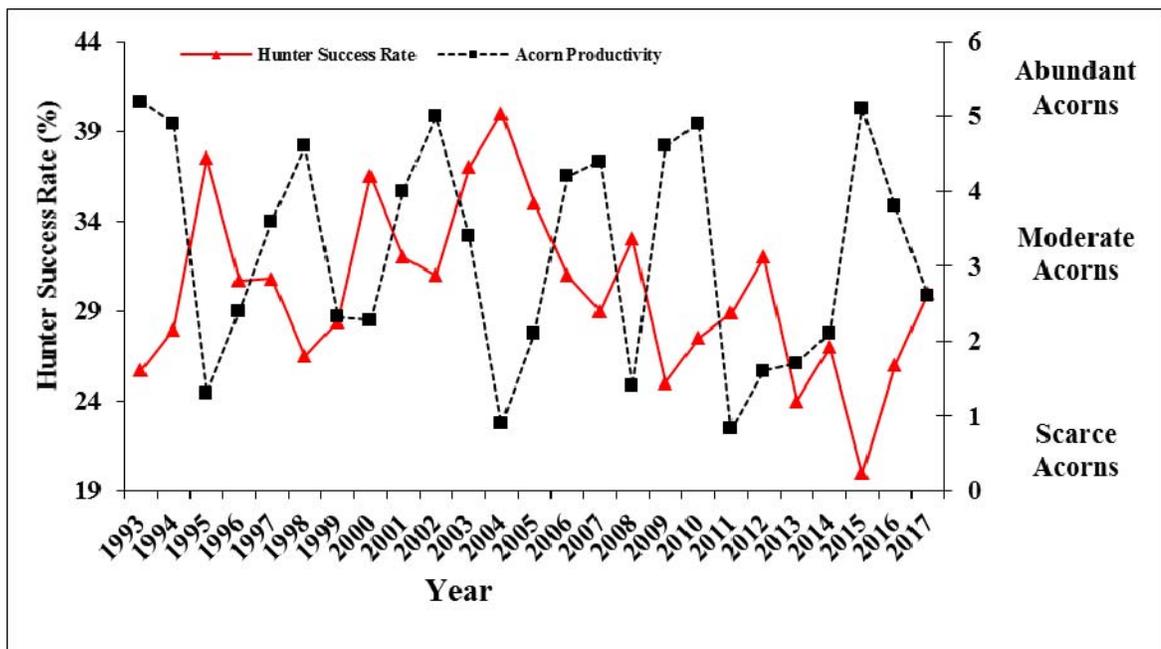
Private Land Deer Harvest

The 2017 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 13.9% from 2016 to 2017.

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Table 7. Private land deer harvest for all seasons (excluding landowner) in each of Connecticut's Deer Management Zones, 2007-2017.

Zone	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
						Year					
1	680	710	719	703	721	728	558	521	472	573	551
2	323	385	394	320	374	395	356	296	273	294	365
3	338	397	442	481	487	529	491	536	426	516	566
4A	259	293	267	293	276	348	320	275	228	295	330
4B	329	471	434	445	470	547	486	496	357	452	488
5	1,165	1,488	1,218	1,232	1,400	1,375	1,345	1,163	902	1,062	1,244
6	458	489	524	556	500	584	557	490	416	488	528
7	438	584	685	772	797	771	765	747	743	838	880
8	330	360	343	374	473	549	489	398	342	368	423
9	628	693	612	624	718	721	721	685	511	580	701
10	504	640	486	576	632	662	533	546	433	471	606
11	1,846	2,179	2,088	1,997	2,022	1,923	1,921	1,505	1,321	1,538	1,666
12	1,030	1,040	872	954	1,324	1,370	1,251	1,017	781	916	1,212
Total	**8,328**	**9,955**	**9,084**	**9,327**	**10,194**	**10,502**	**10,748**	**8,675**	**7,205**	**8,391**	**9,560**
% Change	**-5.7%**	**19.5%**	**-8.7%**	**2.7%**	**9.2%**	**3.0%**	**2.3%**	**-9.3%**	**-16.9%**	**16.4%**	**13.9%**

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 different from previous years, as was the percent of each class harvested (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). Warm temperatures could have led to a reduction in deer observed per hour in 2017, but did not impact harvest per hour. The change in observations in 2017 was more likely caused by a technical issue with the harvest reporting system.

Table 8. Hunter observations and harvest ratios reported during the first month of the archery season in Connecticut, 2014-2017.

Age-sex	First Month of Archery (Sept. 15-Oct. 15)							
	Observation %				Harvest %			
	2014	**2015** [A]	**2016**	**2017** [A]	**2014**	**2015**	**2016**	**2017**
Bucks	27%	11%	19%	12%	32%	32%	33%	39%
Does	54%	51%	53%	45%	54%	55%	51%	47%
Fawns	19%	38%	28%	43%	14%	13%	16%	14%

[A] *Caution should be used when evaluating 2015 and 2017 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, 2015-2017.

	Deer Harvested and Observed/Hour													
	Reported on Day of Harvest													
DMZ	First Month of Archery (Sept. 15-Oct. 15)													
	2015				2016				2017				Δ^3	Δ^3	Δ^3
	n	D/hr[1,4]	F:D[4]	H/hr[2]	*n*	D/hr[1]	F:D	H/hr[2]	*n*	D/hr[1,4]	F:D[4]	H/hr[2]	D/hr[1]	F:D[4]	H/hr
1	23	1.66	0.49	0.31	74	2.46	0.55	0.34	57	0.7	1.06	0.33	-1.76	0.51	-0.01
2	11	1.14	0.76	0.38	59	1.85	0.43	0.33	70	0.41	1.00	0.35	-1.44	0.57	0.02
3	27	1.84	0.78	0.31	105	2.23	0.42	0.40	96	0.75	0.85	0.33	-1.48	0.43	-0.07
4A	17	1.38	0.76	0.32	62	1.73	0.72	0.31	70	0.24	1.05	0.35	-1.49	0.33	0.04
4B	46	2.00	0.74	0.40	99	2.13	0.53	0.35	98	0.65	0.78	0.36	-1.48	0.25	0.01
5	81	1.41	0.93	0.29	200	2.02	0.61	0.32	201	0.55	0.95	0.33	-1.47	0.34	0.01
6	30	1.81	0.81	0.35	90	2.21	0.41	0.37	55	0.65	0.88	0.33	-1.56	0.47	-0.04
7	72	1.92	0.86	0.37	196	2.19	0.58	0.36	187	0.57	1.02	0.36	-1.62	0.44	0.00
8	30	1.87	0.68	0.38	102	1.94	0.51	0.29	87	0.50	0.77	0.3	-1.44	0.26	0.01
9	29	1.56	0.70	0.33	100	2.21	0.46	0.32	85	0.49	0.86	0.37	-1.72	0.40	0.05
10	21	1.58	0.55	0.30	99	2.20	0.43	0.36	104	0.57	1.16	0.34	-1.63	0.73	-0.02
11	172	2.03	0.76	0.36	447	2.25	0.59	0.33	338	0.77	0.89	0.31	-1.48	0.30	-0.02
12	89	1.97	0.70	0.34	216	2.39	0.52	0.35	262	0.71	1.17	0.38	-1.68	0.65	0.03

[1] Deer observed per hour hunted based on successful hunters.
[2] Deer harvested per hour hunted based on successful hunters.
[3] Change from 2016 to 2017.
[4] Caution should be used when evaluating 2015 and 2017 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 (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 2017, 49% (5,703) 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 3).

Table 10. Sex ratios (male:female) and antlered to antlerless ratios of deer harvested in 2017.

	Muzzleloader	Shotgun/Rifle	Archery	Landowner	Crop Damage	Total
Male:Female	0.92:1	1.92:1	1.23:1	1.76:1	0.94:1	1.43:1
Antlered:Antlerless	0.58:1	1.35:1	0.91:1	1.25:1	0.66:1	1.03:1

Table 11. Sex ratios (male:female) of deer harvested during Connecticut's regulated hunting seasons, 2015-2017.

2016		2017		Males per Female			3-year Average
Males	**Females**	**Males**	**Females**	**2015**	**2016**	**2017**	**(2015-2017)**
5,758	4,545	7,185	5,032	1.2:1	1.3:1	1.4:1	1.3:1

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, 36% in 2016, and 39% in 2017. 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 800). 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, 2014-2017.
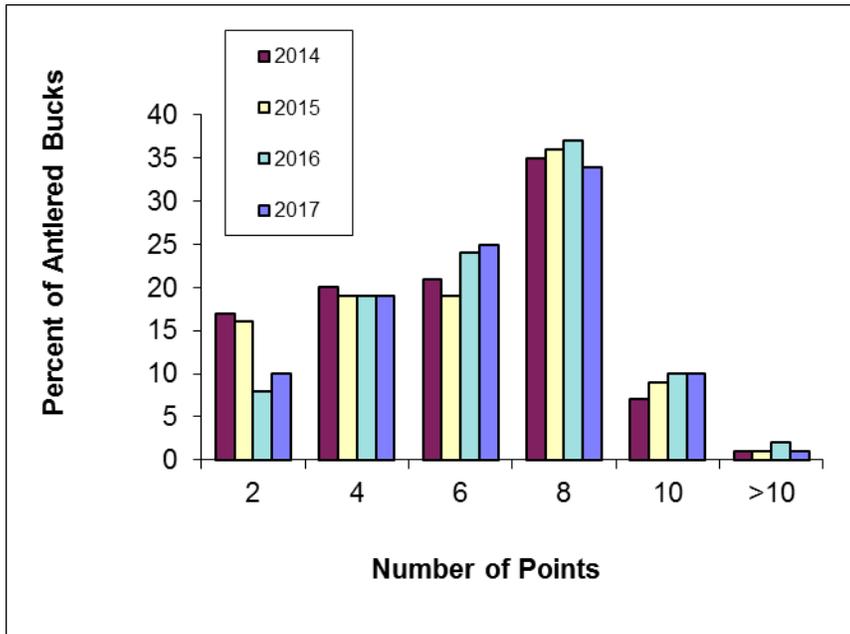
Figure 8. Comparison of trends in roadkills and the antlered and antlerless deer harvests during the archery deer season in Deer Management Zone 11, 1995-2017.
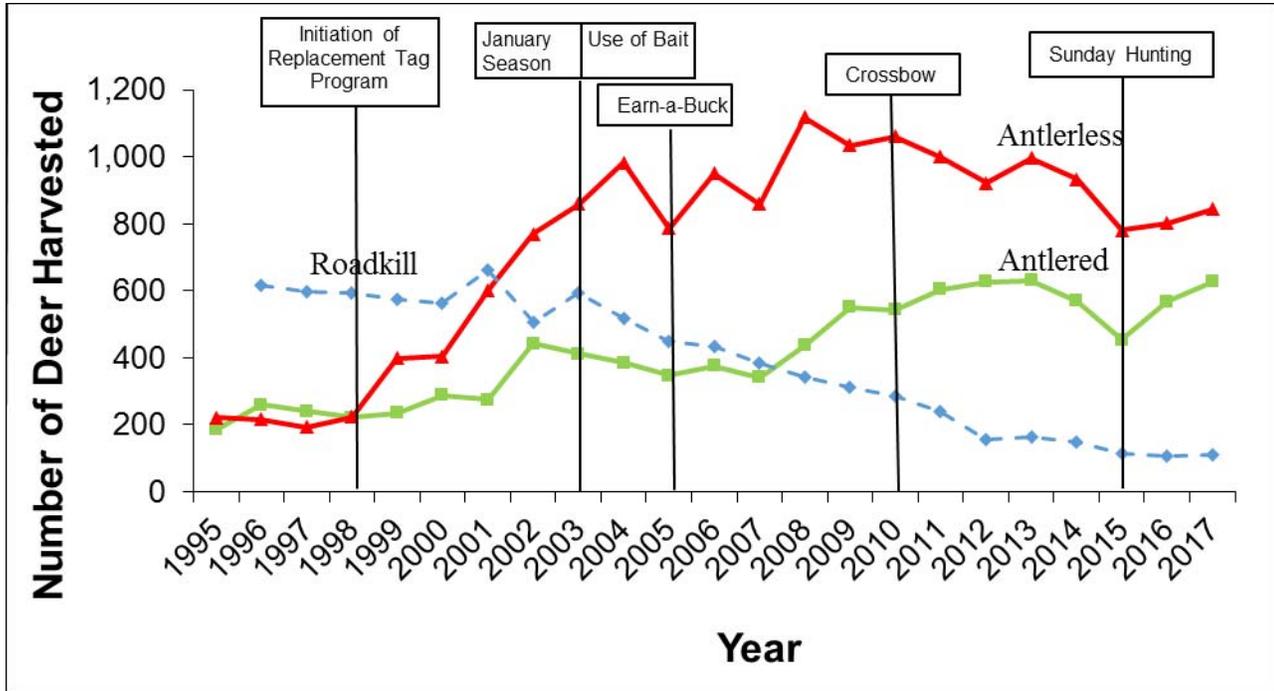
Figure 9. Changes in the sex ratios of harvested deer from Deer Management Zone 11 after implementing various management strategies during the archery season, 1994-2017.
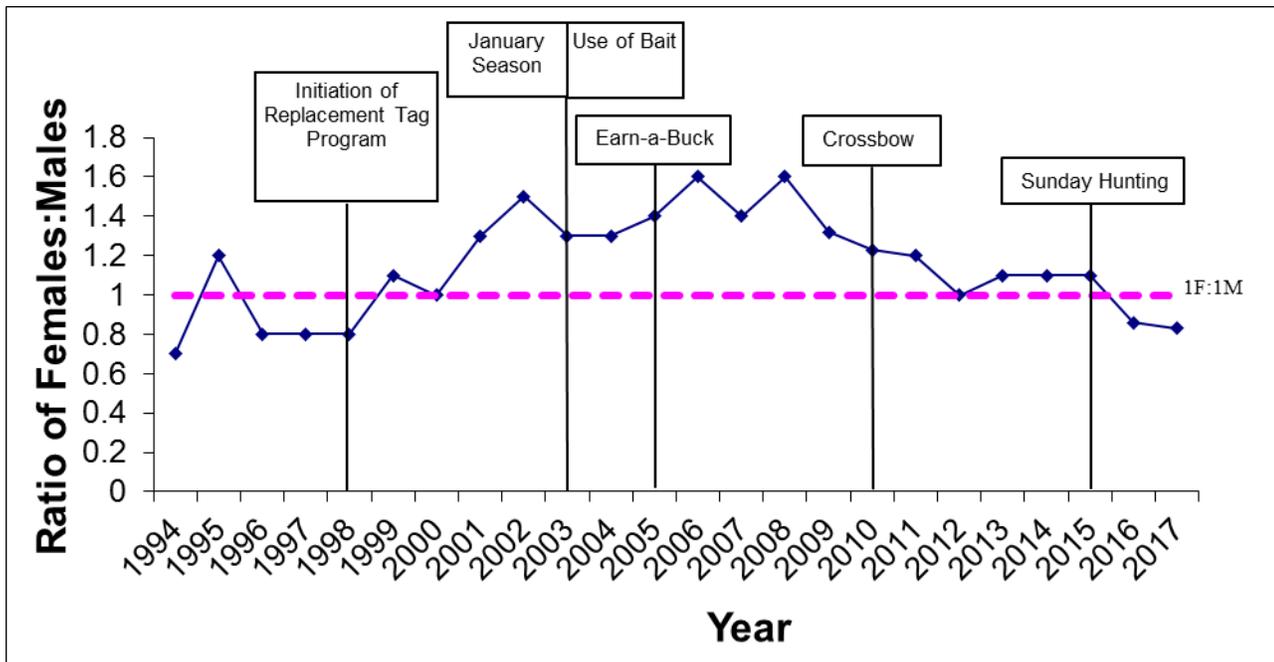
Deer Hunter Expenditures, Effort, Venison Calculations, and Opinions

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, $1,447,074 in 2016, and $1,430,519 in 2017 to the Connecticut General Fund. In addition, data collected from the annual deer hunter surveys indicated that Connecticut deer hunters spent an estimated $6,801,501 on deer hunting-related goods and services in 2017, up from the $5,045,031 spent in 2016.

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In 2017, deer hunters spent a cumulative total of 381,824 days afield. Private and state land shotgun/rifle hunters used the greatest percentage of available hunting days during those seasons (31% and 26% respectively). Although bowhunters used a smaller percentage of available hunting days (24%), the archery season is much longer than the firearms season. Connecticut deer hunters collectively spent less time (32 days per deer taken) but more money ($563 per deer taken) in 2017 compared to 2016 (37 days at $473 per deer taken). In 2017, hunters harvested an estimated 604,000 pounds (average 50 lbs. of meat/hunter; 269 tons total) of venison at an estimated value of $4,077,000 ($6.75/lb.).

Hunters were asked how satisfied they were with their Connecticut deer hunting experience in 2017. Excluding hunters who had no opinion (about 9%), about a third of hunters were very satisfied with their hunting experience (31%), a third were moderately satisfied (36%), and the remainder were slightly satisfied (17%) or not at all satisfied (16%), similar to 2016.

Subscription Rates for State Land Lottery Permits

In 2017, 990 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 2017, the total number of lottery hunt areas was 16. Sixty-seven percent of all potential lottery permits were issued. Two areas reached 100% permit issuance (Table 12). Hunters also should look at harvest levels in the different state land areas when selecting an area to hunt (Appendix 4).

Table 12. Instant award deer lottery selection results by Deer Hunting Lottery Area, 2017.

Deer Hunting Lottery Area	% of Hunting Slots Filled 2017
26	77
27	41[A]
28	84
51 (Yale)	62[A]
52 (Bristol Water Company)	100
53 (Maromas)	59[A]
54 (Skiff Mt.)	43[A]
56 (Centennial Watershed State Forest)	70
58 (MDC [C] Nepaug - Valentine)	33
59 (MDC Nepaug - Pine Hill)	31
60 (Tankerhoosen)	68
61 (Roraback WMA)	30
62 (Aldo Leopold)	93
63 (Mohawk-Ziegler)	33
64 (MDC Barkhamsted East Block)	91 [A]
65 (MDC Hartland)	95 [B]
67 (MDC Barkhamsted West Block)	100

[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 79 moose sightings (129 individuals) in 29 towns (3 unknown) in 2017 and 1,078 sightings over the past 21 years (Figure 10). During the 21-year period, moose sightings were reported in 104 different towns. Sightings were reported from 8 to 43 different towns each year. Moose were observed in Barkhamsted, Canaan, Canton, Colebrook, Goshen, Granby, Hartland, Kent, 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 2017, an average of 1 moose was observed by hunters for every 458 hunter-days spent in the field, slightly less days than in 2016 when 1 moose was observed for every 562 hunter-days in the field. Currently, Connecticut has no open hunting season for moose.

Figure 10. Moose sightings reported on deer hunter surveys, 1996-2017.
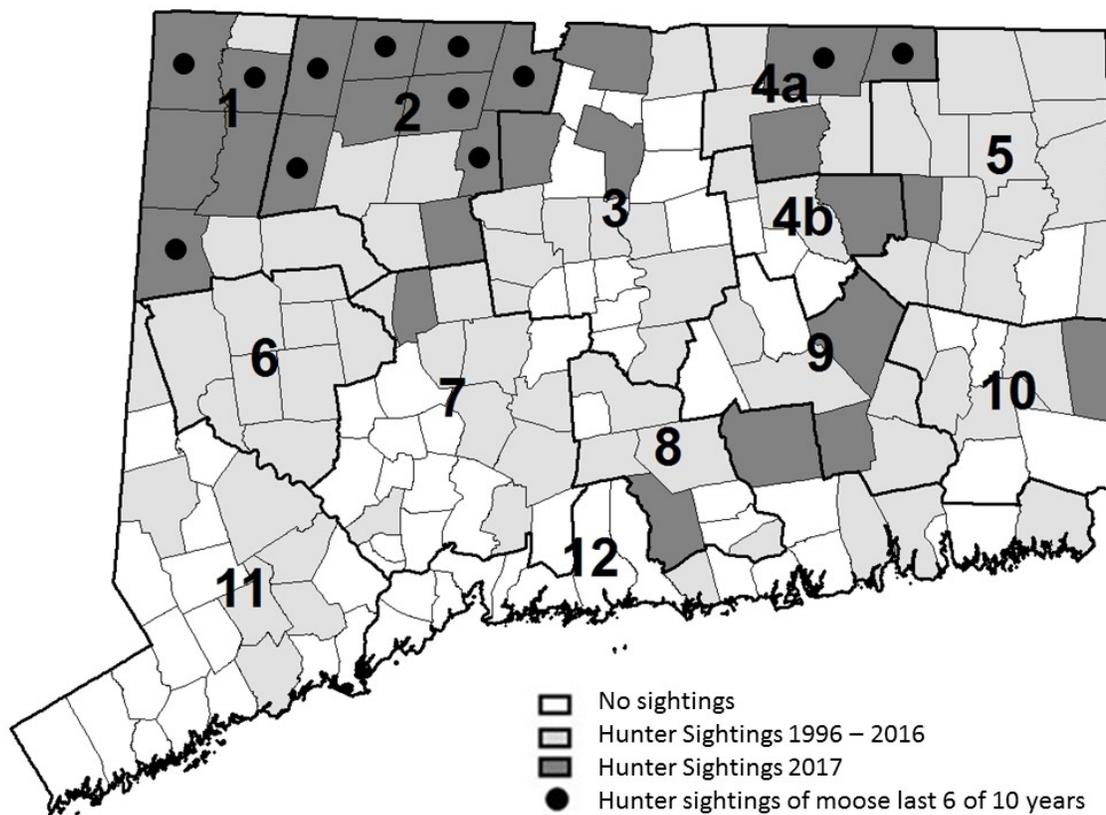
Controlled Deer Hunts

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 2017 controlled hunt, 27 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 2017 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 archery, shotgun, and muzzleloader hunting to maintain deer densities at levels compatible with available habitat. During the 2017 controlled hunt, 17 deer were harvested.

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 archery, shotgun, and muzzleloader hunting. During the 2017 controlled hunt, 8 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 2017 controlled hunt, 86 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 2017 controlled hunt, 10 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 22 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 2017, the deer population was estimated to be 44 deer. In February 2018, 18 deer were removed by DEEP personnel. After the March 2018 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 removing a deer, but are now required to report their removal online or by telephone. During the 2017 calendar year, 558 deer were taken with crop damage permits (Appendix 3). From 1993-2016, annual deer removal with crop damage permits has fluctuated between 462 and 946 deer. Deer removals in DMZs 3 and 10 accounted for 30% of deer removed with crop damage permits in 2017. Crop damage removals increased steadily from May to October, with 53% of the annual removals occurring in September and October (Figure 11). Crop damage permits are not valid in November and December.

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 2017, 1,294 non-hunting deer mortalities were reported (Appendix 4). Of those, 687 were killed in deer-vehicle collisions. This equates to an average of 1.9 deer being killed per day on Connecticut roads and highways. Deer-vehicle collisions accounted for 94% of all reported non-hunting mortality (excluding crop damage; 560) in 2017. 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 2017 was 4,122. Nearly 16% (109) of all roadkilled deer reported in Connecticut in 2017 occurred in DMZ 11 (Fairfield County, Figure 2), the rate of 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 9.7% of the total reported deer mortality in Connecticut, including crop damage harvest (Appendix 4).

Figure 11. Crop damage deer removals by month, 2017.
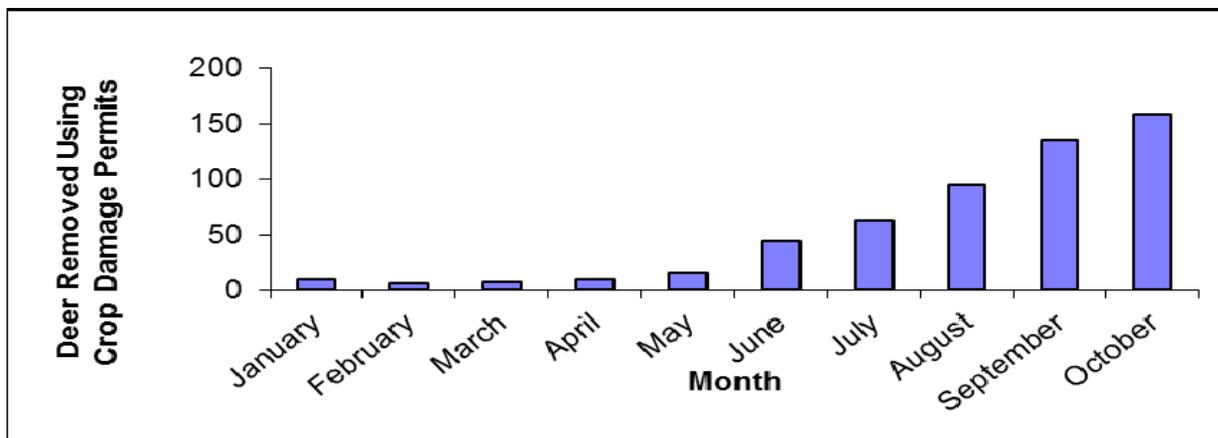
Conclusion

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 have been attributed to the poor economy, or the green movement 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 recent years is now at the same level as it was 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 decline, 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. As a means of exposing a wider range of participants to hunting and fishing, the name was changed to Discover Outdoor Connecticut in 2018. Following is a poster announcing the 2018 event being held at the Franklin Wildlife Management Area in North Franklin, CT. For information about the event, visit www.ct.gov/deep/DiscoverOutdoorCT.

Discover Outdoor Connecticut

Join The Force For The Resource!
at FRANKLIN WILDLIFE MANAGEMENT AREA

Saturday September 22
10AM to 4PM

- FRANKLIN W.M.A. -

- Live Animals
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North Franklin, CT

Connecticut Department of Energy and Environmental Protection
www.ct.gov/deep/DiscoverOutdoorCT
860-424-3011; deep.ctwildlife@ct.gov

Appendix 1. Total reported deer harvest and roadkills by town, 2017.

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Andover	38	28	11	3	0	0	0	80
Ansonia	10	7	0	0	0	2	0	19
Ashford	50	97	34	16	2	2	0	201
Avon	8	15	0	3	2	1	1	30
Barkhamsted	12	62	4	4	0	9	0	91
Beacon Falls	7	21	1	3	0	0	0	32
Berlin	44	24	9	4	3	0	1	85
Bethany	34	21	2	5	5	0	0	67
Bethel	62	7	0	3	0	0	0	72
Bethlehem	16	14	2	2	1	2	0	37
Bloomfield	23	14	0	2	0	2	1	42
Bolton	18	17	3	4	0	0	0	42
Bozrah	15	29	23	4	2	0	0	73
Branford	28	3	1	0	2	1	0	35
Bridgeport	0	1	0	0	0	0	0	1
Bridgewater	21	28	6	6	2	0	0	63
Bristol	9	8	1	0	0	11	2	31
Brookfield	46	4	0	3	0	4	0	57
Brooklyn	31	44	12	6	2	2	0	97
Burlington	14	24	1	4	0	0	0	43
Canaan	23	35	7	5	2	5	0	77
Canterbury	27	57	33	11	5	0	0	133
Canton	36	15	5	4	1	8	0	69
Chaplin	16	28	11	11	2	3	0	71
Cheshire	77	16	1	4	25	4	0	127
Chester	15	23	3	2	5	0	0	48
Clinton	36	7	0	2	1	0	0	46
Colchester	49	56	22	9	5	0	0	141
Colebrook	6	9	1	3	0	3	0	22
Columbia	32	33	12	5	8	1	0	91
Cornwall	20	36	12	3	0	6	0	77
Coventry	83	95	9	11	9	5	1	213
Cromwell	5	4	0	1	0	3	0	13
Danbury	81	10	1	2	0	6	0	100
Darien	26	0	2	0	0	10	4	42
Deep River	18	11	4	2	7	0	2	44
Derby	6	3	0	0	0	1	0	10
Durham	38	30	2	4	0	1	0	75
East Granby	5	8	1	1	0	0	0	15
East Haddam	106	80	28	8	5	0	0	227
East Hampton	28	44	12	13	0	0	0	97
East Hartford	8	2	1	1	9	0	0	21
East Haven	24	0	1	1	0	0	0	26
East Lyme	53	37	3	4	1	0	0	98
East Windsor	23	34	6	7	6	0	0	76
Eastford	14	66	9	11	0	1	0	101
Easton	91	36	3	0	7	17	1	155
Ellington	29	10	18	3	1	0	0	61

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Enfield	38	23	2	2	1	10	0	76
Essex	5	5	1	0	0	0	0	11
Fairfield	84	8	0	1	0	3	0	96
Farmington	8	20	0	0	13	17	2	60
Franklin	22	39	11	7	8	1	0	88
Glastonbury	38	41	4	10	35	34	2	164
Goshen	19	20	8	5	0	8	0	60
Granby	14	16	8	3	0	1	0	42
Greenwich	91	3	0	0	0	0	0	94
Griswold	40	69	22	7	40	7	0	185
Groton	49	4	3	3	3	2	0	64
Guilford	102	26	5	6	9	7	1	156
Haddam	56	54	26	9	1	2	0	148
Hamden	33	18	1	4	22	0	0	78
Hampton	24	40	20	8	4	1	1	98
Hartford	0	1	1	0	0	1	1	4
Hartland	8	36	4	4	0	4	0	56
Harwinton	28	30	8	5	12	6	0	89
Hebron	55	44	14	7	0	0	0	120
Kent	24	51	3	5	5	6	0	94
Killingly	35	49	17	7	6	17	0	131
Killingworth	41	41	12	8	0	0	1	103
Lebanon	59	93	44	18	9	0	0	223
Ledyard	44	34	9	8	1	15	0	111
Lisbon	18	22	18	5	0	1	0	64
Litchfield	37	49	13	3	3	12	0	117
Lyme	48	42	11	9	5	0	0	115
Madison	59	20	0	2	0	11	0	92
Manchester	18	11	1	3	2	3	1	39
Mansfield	62	62	14	10	6	13	0	167
Marlborough	27	41	13	8	0	2	0	91
Meriden	22	5	0	0	0	12	0	39
Middlebury	11	9	4	4	0	12	0	40
Middlefield	31	30	1	5	10	1	0	78
Middletown	62	34	10	16	0	7	1	130
Milford	44	6	1	1	1	2	5	60
Monroe	56	8	0	2	0	0	0	66
Montville	52	38	13	13	1	1	0	118
Morris	20	18	4	4	2	1	0	49
Naugatuck	35	7	3	1	0	1	0	47
New Britain	3	0	0	0	0	1	0	4
New Canaan	68	1	0	0	0	4	4	77
New Fairfield	41	15	0	6	0	1	1	64
New Hartford	37	27	8	4	5	4	1	86
New Haven	6	1	0	0	0	2	0	9
New London	4	0	0	0	0	1	1	6
New Milford	65	58	14	11	1	0	0	149
Newington	5	0	0	0	1	0	0	6
Newtown	160	53	4	14	30	33	0	294

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Norfolk	6	20	11	3	0	1	0	41
North Branford	47	12	1	4	2	0	0	66
North Canaan	8	15	3	1	0	0	0	27
North Haven	33	5	0	1	0	0	0	39
North Stonington	54	76	10	9	0	0	0	149
Norwalk	25	1	0	0	0	25	0	51
Norwich	20	28	5	3	0	0	6	62
Old Lyme	82	30	3	3	0	0	0	118
Old Saybrook	13	8	0	0	0	6	0	27
Orange	46	3	0	5	0	3	3	60
Oxford	30	24	9	6	7	8	0	84
Plainfield	47	55	19	7	5	5	0	138
Plainville	3	2	0	4	0	0	0	9
Plymouth	17	14	6	2	0	1	2	42
Pomfret	30	63	14	19	5	5	0	136
Portland	14	32	1	3	3	13	1	67
Preston	33	36	14	5	15	0	0	103
Prospect	23	10	0	3	0	6	0	42
Putnam	21	21	5	3	4	7	0	61
Redding	114	37	1	9	2	0	0	163
Ridgefield	138	23	0	22	0	14	2	199
Rocky Hill	4	7	0	2	5	6	0	24
Roxbury	12	20	1	12	5	1	0	51
Salem	36	45	15	9	1	0	0	106
Salisbury	80	67	9	16	9	6	0	187
Scotland	25	45	17	9	0	6	0	102
Seymour	47	6	1	2	0	5	2	63
Sharon	38	75	6	8	15	4	1	147
Shelton	78	4	1	1	12	2	1	99
Sherman	41	15	3	4	4	3	0	70
Simsbury	23	5	0	1	1	1	0	31
Somers	32	18	2	8	0	5	0	65
South Windsor	26	13	5	3	0	0	0	47
Southbury	61	22	2	5	9	14	1	114
Southington	39	14	0	7	1	8	0	69
Sprague	15	25	6	9	4	0	0	59
Stafford	57	60	24	17	0	2	0	160
Stamford	55	3	0	0	0	0	0	58
Sterling	36	30	15	7	0	3	0	91
Stonington	34	45	8	9	0	4	0	100
Stratford	22	4	0	0	0	0	0	26
Suffield	35	42	6	4	14	0	0	101
Thomaston	14	10	5	2	1	3	0	35
Thompson	82	73	31	11	7	6	0	210
Tolland	59	25	15	6	2	4	0	111
Torrington	19	23	7	4	0	11	0	64
Trumbull	47	1	0	0	0	2	1	51
Union	28	26	6	5	0	1	0	66
Vernon	20	8	2	2	0	2	0	34

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Voluntown	35	54	12	11	14	1	0	127
Wallingford	46	21	2	7	11	5	2	94
Warren	12	20	6	4	4	2	0	48
Washington	30	35	14	6	27	13	0	125
Waterbury	11	1	0	2	0	2	0	16
Waterford	92	27	8	5	0	15	1	148
Watertown	17	22	6	1	1	0	0	47
West Haven	1	0	0	0	0	0	0	1
West Hartford	20	1	0	0	3	0	0	24
Westbrook	17	11	3	4	0	1	0	36
Weston	37	25	0	0	0	2	0	64
Westport	10	1	0	0	0	0	0	11
Wethersfield	1	5	0	6	5	3	0	20
Willington	37	27	19	2	0	5	0	90
Wilton	105	24	0	6	0	8	0	143
Winchester	13	14	7	12	0	2	0	48
Windham	37	45	6	6	3	1	0	98
Windsor	16	8	2	1	2	9	0	38
Windsor Locks	0	1	0	0	0	3	0	4
Wolcott	9	3	0	2	0	3	0	17
Woodbridge	46	6	0	5	0	16	2	75
Woodbury	19	23	4	7	1	19	0	73
Woodstock	61	86	29	0	0	7	0	183
Total	**5,910**	**4,281**	**1,079**	**810**	**560**	**687**	**60**	**13,387**

Appendix 2. Archery harvest on state areas (archery only areas), 2017.

Name of Area	Total Deer	F	M
Aldo Leopold WMA	1	1	0
Algonquin State Forest	2	1	1
American Legion State Forest	1	1	0
Assekonk Swamp WMA	1	1	0
Babcock Pond WMA	1	0	1
Barber Pond WMA	6	4	1
Barn Island WMA	1	1	0
Bartlett Brook WMA	1	0	1
Bear Hill WMA	1	0	1
Beaver Brook State Park	3	2	1
Bennett's Pond State Park	5	0	5
Bigelow Hollow State Park	4	2	2
Bishops Swamp WMA	5	2	3
Black Pond WMA	0	0	0
Black Rock Lake	0	0	0
Bloomfield Flood Control Area (Site 1)	3	2	1
Camp Columbia	6	3	3
Cedar Swamp WMA	3	3	0
Centennial Watershed SF	34	17	17
Centennial Watershed SF (Canaan Block)	1	1	0
Centennial Watershed State Forest (BHC)	2	0	2
CL&P (borders Newgate WMA)	1	0	1
Cockaponset State Forest	40	18	22
Collis P. Huntington State Park	11	6	5
Cromwell Meadows WMA	0	0	0
Durham Meadows WMA	1	1	0
East Swamp	4	1	3
East Twin Lakes Water Access Area	3	3	0
Eight Mile River WMA	0	0	0
Ellithorpe Flood Control Area	0	0	0
Enders State Forest	4	2	2
Franklin Swamp WMA	2	1	1
George C. Waldo State Park	0	0	0
Goshen WMA	2	2	0
Great Swamp Flood Control Area	2	2	0
Hancock Brook Lake	0	0	0
Harkness/Verkades	8	5	3
Higganum Meadows WMA	6	2	4
Higganum Reservoir	1	0	1
Housatonic River WMA	3	2	1

Name of Area	Total Deer	F	M
Housatonic State Forest	7	3	4
James V. Spignesi WMA	1	0	1
John A. Minetto State Park	1	0	1
Killingly Pond State Park	2	2	0
Kollar WMA	5	3	2
Larson Lot WMA	3	3	0
Lebanon Coop Mgmt. Area	1	0	1
Little River Fish and Wildlife Area	0	0	0
Mad River Dam Flood Control Area	2	0	2
Mansfield Hollow Lake	15	6	9
Mansfield State-Leased Field Trial Area	1	1	0
Mattatuck State Forest	9	1	8
MDC-Colebrook Reservoir/Hogback Dam	2	1	1
MDC - Valentine Block	0	0	0
MDC Greenwoods	3	1	2
Meadow Brook WMA	0	0	0
Menunketesuck WMA (Formerly Chapmans Pond)	2	1	1
Meshomasic State Forest	15	7	8
Messerschmidt Pond WMA	1	0	1
Millers Pond	1	1	0
Mohawk State Forest-Clark Pond	2	1	1
Mohawk State Forest-Ziegler/Johnson Tract	1	1	0
Mohegan State Forest (including Waldo Tract)	1	1	0
Mono Pond	1	0	1
Mount Riga State Park	7	7	0
Nassahegon State Forest	0	0	0
Natchaug State Forest	19	6	13
Nathan Hale State Forest Mgmt. Area	9	6	3
Naugatuck State Forest	20	6	14
Naugatuck State Forest (Great Hill Block)	3	1	2
Naugatuck State Forest (Quillinan Reservoir Block)	6	4	2
Nehantic State Forest	2	0	2
Nepaug State Forest	1	1	0
Newgate WMA	2	0	2
Nipmuck State Forest	27	6	21
Northfield Brook Lake	0	0	0
Nott Island	1	1	0
Maromas Coop. WMA	4	3	1
Skiff Mtn. Coop. WMA	5	2	3
Nye Holman State Forest	3	1	2
Pachaug State Forest	49	28	21

Name of Area	Total Deer	F	M
Paugnut State Forest	3	0	3
Paugussett State Forest	5	1	4
Peoples State Forest	3	2	1
Pease Brook WMA	0	0	0
Pomeroy State Park	4	1	3
Pootatuck State Forest	1	1	0
Quaddick State Forest	7	2	5
Quinebaug River WMA	2	1	1
Quinebaug River WMA (Aspinook Pond)	0	0	0
Quinnipiac River Marsh	2	2	0
Quinnipiac River State Park	12	5	7
Red Cedar Lake	2	2	0
Robbins Swamp WMA	4	2	2
Roraback WMA	5	3	2
Rose Hill WMA	3	2	1
Ross Marsh WMA	4	3	1
Ross Pond State Park	1	0	1
Salmon River Cove & Haddam Neck	0	0	0
Salmon River State Forest	10	6	4
Scantic River State Park	3	2	1
Selden Island State Park	0	0	0
Sessions Woods WMA	0	0	0
Shenipsit State Forest	13	5	8
Silvio O. Conte NWR	0	0	0
Simsbury WMA	8	3	5
Stones Ranch Military Reservation	0	0	0
Suckerbrook Flood Control	1	0	1
Sugarbrook Field Trial Area	0	0	0
Suffield WMA	0	0	0
Sunnybrook State Park	1	0	1
Talbot WMA	2	1	1
Tankerhoosen WMA	5	1	4
Thomaston Dam	3	2	1
Topsmead State Forest	1	1	0
Trout Brook Valley State Park	1	1	0
Tunxis State Forest	5	1	4
Wangunk Meadows	1	0	1
West Thompson Dam	11	6	5
Whiting River Flood Control Area	1	1	0
Wood Creek Flood Control Area	1	1	0
Wooster Mountain State Park	1	0	1

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

Appendix 3. **Sex ratios (male:female) of deer harvested during Connecticut's regulated hunting seasons, 2015-2017.**

Season	2015		2016		2017		3-year Average (2015-2017)		Males per Female		
	Males	Females	Males	Females	Males	Females	Males	Females	2015	2016	2017
Archery											
State Land	302	253	358	305	294	305	318	288	1.19	1.17	0.96
Private Land	2,025	1,947	2,425	2,000	2,782	2,000	2,411	1,982	1.04	1.21	1.39
Subtotal	**2,327**	**2,200**	**2,783**	**2,305**	**3,076**	**2,305**	**2,729**	**2,270**	**1.06**	**1.21**	**1.33**
Muzzleloader											
State Land	40	38	38	37	68	64	49	46	1.05	1.03	1.06
Private Land	157	235	243	325	316	352	239	304	0.67	0.75	0.90
Subtotal	**197**	**273**	**281**	**362**	**384**	**416**	**287**	**350**	**0.72**	**0.78**	**0.92**
Shotgun/Rifle											
State Land	365	187	457	179	528	179	450	182	1.95	2.55	2.95
Private Land	1,607	1,203	1,989	1,187	2,250	1,187	1,949	1,192	1.34	1.68	1.90
Subtotal	**1,972**	**1,390**	**2,446**	**1,366**	**2,778**	**1,366**	**2,399**	**1,374**	**1.42**	**1.79**	**2.03**
Landowner	451	250	582	287	685	389	573	309	1.80	2.03	1.76
Total	**4,947**	**4,113**	**6,092**	**4,320**	**6,923**	**4,476**	**5,987**	**4,303**	**1.20**	**1.41**	**1.55**

Appendix 4. Deer harvest on state Deer Lottery Hunting Areas (DLHA), 2017.

DLHA	Shotgun	Muzzleloader	Archery	Total
26	0	0	1	1
27	1	2	6	9
28	4	1	6	11
51	27	0	2	29
52	16	0	0	16
53	4	7	4	15
54	1	0	5	6
56	49	0	34	83
58	10	0	0	10
59	3	0	0	3
60	2	1	5	8
61	6	1	5	12
62	3	2	1	6
63	1	0	1	2
64	20	0	0	20
65	16	0	1	17
66	0	0	8	8
67	33	0	0	33
Total	**196**	**14**	**79**	**289**

Appendix 5. Non-hunting deer mortality reported in Connecticut, 2004-2017.

Cause of Death	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Road	2,620	2,667	2,029	1,967	2,190	1,902	1,456	1,683	1,177	1,211	1,081	749	619	687
Dog	2	3	3	4	3	1	1	0	2	0	5	0	0	2
Unknown	183	183	117	162	72	92	49	82	58	89	59	62	49	43
Illegal	6	2	3	1	9	3	10	4	6	4	2	2	0	2
Crop Damage	946	842	755	667	883	780	715	804	864	831	812	464	462	560
Total	**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**	**1,294**
Non-hunting: Harvest	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	1:9.3
% Mortality*	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	9.7
% of Harvest	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	10.7

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

Appendix 6.   Frequency of deer roadkills in each of Connecticut's Deer Management Zones, a 5-year comparison, 2013-2017.

Zone	2013	2014	2015	2016	2017	Five-year Total	Zonal %	Habitat (sq. miles)	Roadkills/Sq. Mile 2015	2016	2017
1	71	70	18	26	41	226	5.2	344.1	0.05	0.08	0.12
2	74	55	44	46	57	276	6.3	409.85	0.11	0.11	0.14
3	166	125	112	89	107	599	13.8	272.1	0.41	0.33	0.39
4A	67	42	28	32	17	186	4.3	213.1	0.13	0.15	0.08
4B	87	41	30	37	21	216	5.0	120.0	0.25	0.31	0.18
5	60	84	49	37	66	296	6.8	444.9	0.11	0.08	0.15
6	68	52	36	33	50	239	5.5	259.1	0.14	0.13	0.19
7	116	99	119	74	100	508	11.7	370.9	0.32	0.20	0.27
8	44	9	15	11	11	90	2.1	167.6	0.09	0.07	0.07
9	99	83	29	15	3	229	5.3	277.8	0.10	0.05	0.01
10	53	70	61	35	50	269	6.2	243.6	0.25	0.14	0.21
11	163	150	116	105	109	643	14.8	290.76	0.40	0.36	0.37
12	143	99	92	79	55	468	10.8	356.4	0.26	0.22	0.15
Total	**1,211**	**1,081**	**749**	**619**	**687**	4,347	**100.0**	**3,770.2**	**0.20***	**0.16***	**0.18***

* *These numbers are averages, not totals.*

Appendix 7. Deer removed using crop damage permits in Connecticut's Deer Management Zones, 2005-2017.

Zone	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1	82	64	58	59	55	45	37	67	44	39	32	37	38
2	18	18	17	17	12	19	17	25	15	16	15	20	18
3	105	71	49	76	101	70	99	70	97	99	30	58	85
4A	25	14	21	21	6	4	10	15	16	8	10	8	3
4B	38	32	33	51	33	39	28	41	56	55	24	13	23
5	129	95	68	119	95	57	93	87	88	77	55	37	45
6	82	77	54	90	58	78	56	74	62	89	49	41	49
7	62	69	89	114	93	88	123	127	118	110	72	60	77
8	37	47	33	42	33	32	28	36	40	41	11	11	23
9	53	48	30	69	79	55	56	56	77	65	35	40	18
10	50	66	51	82	76	75	104	90	83	90	53	53	82
11	114	109	116	111	106	118	93	113	91	79	45	57	55
12	47	45	48	32	33	35	60	63	44	43	30	27	44
Total	**842**	**755**	**667**	**883**	**780**	**715**	**804**	**864**	**831**	**812**	**464**	**462**	**560**