2021 Connecticut Deer Program Summary

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Introduction

This booklet is the 42nd 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 2021, including changes in deer management regulations, harvest statistics, research activities, and population dynamics of Connecticut's deer population. Connecticut's Deer Management Program goals are: 1) to maintain the population at levels compatible with available habitat and land uses, and 2) to allow for a sustained yield of deer for use by Connecticut hunters. The program has mainly 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, while increasing populations in a few areas. 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 deer populations.

Pursuant to the goal of maintaining populations at levels compatible with available habitat and land uses, aggressive management strategies have been implemented in areas with high deer densities. 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 (Earn-a-Buck; EAB) 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 DMZs 11 and 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, crossbows were expanded for 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 2018, archers were allowed to hunt on Sundays on private land in all DMZs. 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.

Pursuant to the goal of allowing for a sustained yield of deer by Connecticut hunters, in other areas of the state where long-term declines in the population appeared to be occurring, a restriction on the use of either sex tags during the firearms seasons was needed (DMZ 4 in 1999 and DMZ 2 in 2016). In 2002, deer populations appeared to be stable in the southern portion, but not in the northern portion of DMZ 4. Following the 2002 season, 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). A similar low population density has been observed in DMZ 2, forcing a restriction on the use of the either-sex tag during the firearms season (2016). Until a clear increasing trend begins to occur in those zones, the restriction remains in place.

Hunter Notes

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 (https://portal.ct.gov/DEEP/Hunting/CEFS/Conservation-Education-Firearms-Safety-Program). Licenses and permits to fish, hunt, and trap in Connecticut can be purchased at licensing vendors or online by going to Connecticut's Online Outdoor Licensing System at https://portal.ct.gov/CTOutdoorLicenses.

In 2017, a concerned hunter reported finding several dead deer along a small body of water adjacent to the Connecticut River in Portland. A few fresh carcasses were submitted for testing with 3 deer testing positive for Hemorrhagic Disease (HD). Based on reports, it is believed over 70 deer may have died due to infections that year. No infected animals were reported in 2018 or 2019; however, in 2020 one deer tested positive for HD in Ridgefield, with approximately 20 or more found in the surrounding areas near water bodies, indicating they may have died from HD. Hunters were asked on the 2020 deer hunter survey "if they had observed any dead deer that appeared to die of unknown causes or observed dead deer in or around a water body." Based on those responses, an additional 20 deer many have died from HD, so the total number of deer that died was probably closer to 80 deer in 2020. In summer 2021, two separate deer that appeared unhealthy were euthanized, necropsied, and tested for HD, both of which were negative. Although no additional public reports indicating a HD outbreak had occurred, hunters were again asked on the 2021 deer hunter survey "if they had observed any dead deer that appeared to die of unknown causes or observed dead deer in or around a water body." Hunters reported a few observations of deer in DMZs 6, 7, and 11 where, if HD did occur, Connecticut was fortunate it was not a major outbreak. Hemorrhagic Disease is one of the most important infectious diseases affecting white-tailed deer and spreads by a bite from an infected midge. Additional information about HD can be found on the DEEP website at https://portal.ct.gov/DEEP/Wildlife/Wildlife-Diseases#HD.

During winter 2022, a total of 25 deer were sampled for SARS-CoV-2 (COVID) from New London and Fairfield County as part of a larger nationwide surveillance effort. All deer were negative for the virus. Although deer have tested positive in numerous states, there continues to be no evidence that deer or other wildlife play a significant role in the spread of the virus among people. Additional

information and precautions when handling game can be found on the DEEP Wildlife Diseases webpage listed above or at https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/food-and-COVID-19.html#wildanimals.

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. Beginning in 2020, the use of natural deer urine products was prohibited, particularly for the purposes of taking or attempting to take or attract deer, or for the surveillance or scouting of deer. CWD can spread through exposure to infected deer urine. This new regulation safeguards Connecticut's native deer population against unnecessary risk of contracting CWD. Specific wording of the regulation and an updated list of states where CWD has been documented can be found on the DEEP website at https://portal.ct.gov/DEEP/Wildlife/Wildlife-Diseases#CWD. In 2021, the DEEP collected 430 CWD samples from throughout the state, all of which tested negative. Since the beginning of collection efforts in 2003, nearly 9,000 samples have been collected, all of which have tested negative for CWD.

The Connecticut Department of Energy and Environmental Protection (DEEP) Wildlife Division expects to be collecting deer heads to test for CWD, HD, and possibly samples to test for SARS-CoV-2 during the 2022 hunting season. Anyone interested in donating deer heads from harvested deer should contact Wildlife Division staff, Andrew LaBonte (Andrew.labonte@ct.gov) or Nathan Sajkowicz (Nathan.sajkowicz@ct.gov) for more information.

Permit Allocation

To successfully manage Connecticut's deer population growth rate, the Wildlife Division provides opportunities for hunters to purchase multiple deer permits with varying numbers of tags. Permit issuance increased consistently from 1975 to 1992 and remained relatively stable from 1992 to 2009 but has been declining over the past 12 years (Figure 1). Since 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. Permit issuance in 2016 was similar to permit issuance levels in 1989. Issuance has declined every year except in 2020 where we saw a slight increase, likely attributed to the COVID-19 pandemic and the presence of snow during the muzzleloader season, but issuance again declined in 2021 (Figure 1). In 2021, issuance for state land shotgun (-6.8%) and private land muzzleloader (-5.9%) permits had the greatest one-year decline (Table 1). Archery permit issuance increased to a record high of 17,029 in 2017, declined slightly in 2018 and 2019, but increased again in 2020, likely a result of the pandemic. However, archery permit issuance decreased again (-5.3%) in 2021 (Table 1). Overall, shotgun/rifle hunters purchased the largest percentage of permits (37.4%), followed by archery hunters (37.0%), muzzleloader hunters (17.9%), and landowners (7.7%). Sixty-four percent of firearms deer permits were issued for use on private land and the remaining 36% were issued for state-managed lands. During the twelfth year of authorizing the use of revolvers for deer hunting, 897 hunters took advantage of this opportunity, fewer than the previous year (2020; 931).

Figure 1. Total deer permit issuance and total deer harvest in Connecticut, 1975-2021.
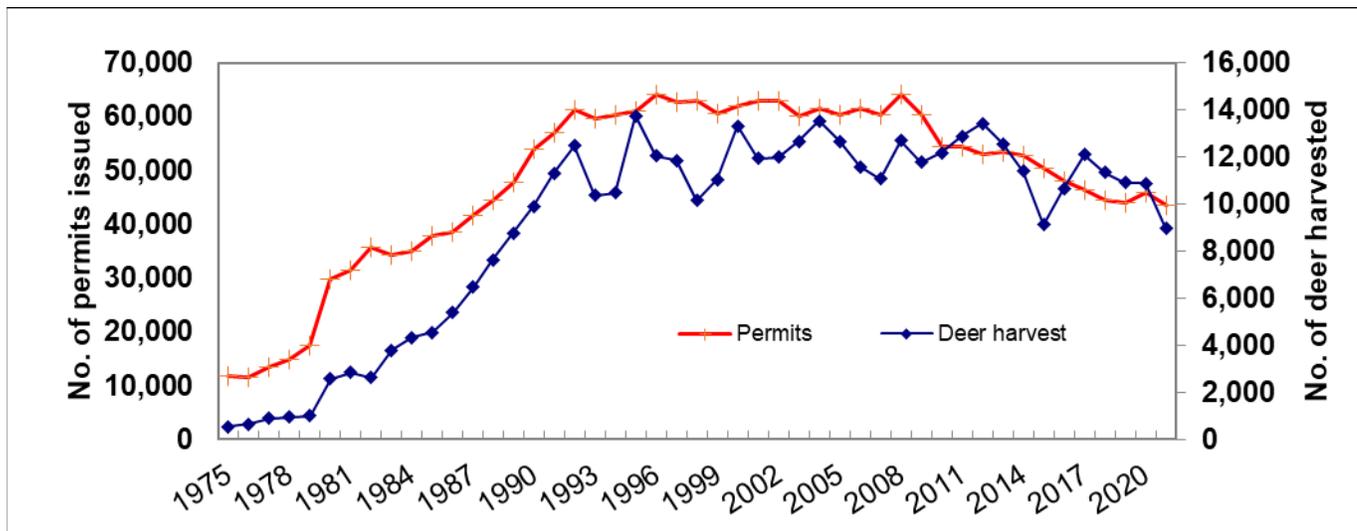
Table 1. Deer hunting permits issued in Connecticut for all regulated hunting seasons, 2018-2021.

Season	Permits 2018	Permits 2019	Permits 2020	Permits 2021	3-year Average Permits 2018-2020	% of Total 2021	% Change 2020 to 2021	% Change 3-year Avg. to 2021
Archery	16,451	16,428	16,997	16,094	16,625	37.0%	-5.3%	-3.2%
Muzzleloader								
State Land	2,693	2,566	3,004	2,865	2,754	6.6%	-4.6%	4.0%
Private Land	5,280	4,964	5,249	4,940	5,164	11.3%	-5.9%	-4.3%
Subtotal	7,973	7,530	8,253	7,805	7,919	17.9%	-5.4%	-1.4%
Shotgun/Rifle								
State Land*	7,080	7,016	6,326	5,893	6,807	13.5%	-6.8%	1.6%
Private Land	10,974	10,946	10,897	10,408	10,939	23.9%	-4.5%	-4.9%
Subtotal	16,526	16,477	17,223	16,301	16,742	37.4%	-5.4%	-2.6%
Revolver[A]	857	858	931	897	882	2.1%	-3.7%	1.7%
Landowner	3,594	3,580	3,439	3,337	3,538	7.7%	-3.0%	-5.7%
Total	**44,544**	**44,015**	**45,912**	**43,537**	**44,824**	**100.0%**	**-5.2%**	**-2.9%**

* A and B season combined and includes controlled hunt permits.
[A] Not included in total permits.

State Land Lottery and Controlled Hunt Permits

Over the years, permit issuance has been less than the permit quota established for a given area and many areas were re-designated as no-lottery areas (Appendix 2). Lottery permits were allocated at a maximum rate of 1 shotgun permit per 20 acres. In 2021, the total number of lottery hunt areas was 12. In 2021, 695 hunters were selected to hunt during the state land lottery and controlled hunt seasons through the state-administered Deer Lottery Program, with 97% of all potential lottery permits actually purchased. Deer Hunting Lottery Areas 26, 58, 63, 64, 66, and 67 reached 100% permit issuance (Table 2). Hunters also should look at harvest levels in the different state land areas when selecting an area to hunt (Appendix 2).

Table 2. Deer lottery selection results by Deer Hunting Lottery Area, including over the counter sales, 2021.

Deer Hunting Lottery Area	% of Hunting Slots Filled
26 (Trout Brook Valley SP)	100
28 (Naugatuck SF -Quillinan Reservoir)	96
51 (Yale)[A]	77[A]
52 (Bristol Water Company)	99
56 (Centennial Watershed State Forest)	99
58 (MDC[B] Nepaug - Valentine)	100
60 (Tankerhoosen)	95
62 (Aldo Leopold)	95
63 (Mohawk-Ziegler)	100
64 (MDC[B] Barkhamsted East Block)	100
66 (MDC[B] Nepaug Sweetheart Mt. Block)	100
67 (MDC[B] Barkhamsted West Block)	100

[A] A season only.
[B] Metropolitan District Commission.

Regulated Deer Harvest

Regulated hunting is an effective and cost-efficient method for maintaining deer populations at acceptable densities. During the 2021 hunting season, 8,971 deer were legally harvested and reported (Table 3; Figure 1). This represents a 17.6% decrease from the 2020 harvest. Excluding the landowner season, over half (56%) of the deer taken during the 2021 hunting season were harvested by bowhunters. Since 2010, record bow harvests have been recorded (5,211; 5,413; 6,046; 5,433; 4,566; 5,286; 5,910; 5,332; 5,738, and 5,803 respectively) and although the archery harvest declined in 2021 to 4,528, the harvest continues to exceed the shotgun/rifle harvest.

Sixty-eight percent (3,073 total – 2,574 private, 499 state) of the total archery harvest was taken during the early archery season (September 15 to November 16); 18% (813 total – 764 private, 49 state) was taken during the 3-week shotgun/rifle season (open in all zones on private land and state land bowhunting-only areas); 10% (470 – 441 private, 29 state) was taken during the muzzleloader season (December 8 to December 31); and 4% (172) was taken during the January season open in DMZs 11 and 12 on private land only (January 1-31, 2022). State lands open to archery hunting are a valuable resource to Connecticut deer hunters as well (Appendix 2). Harvest by crossbow hunters during the January season (2022, 66%) has increased greatly since it was first legalized in 2010 (33%), and crossbow harvest has increased similarly during the regular season (2021, 59%) since legalized statewide in 2013 (28%). Based on the number of deer harvested and reported by bowhunters, approximately 1 of 3 (29%) hunters harvested 2 or more deer during the regular archery season.

In 2021, 1,618 deer were harvested during the first 4 days of the shotgun/rifle season (includes junior hunting days), a 10% decrease from 2020 (1,796). The reported shotgun/rifle harvest was 3,119 deer in 2021, a 9% decrease from 2020 (3,429). In 2021, the landowner harvest was 840, a 9.4% decrease from 2020 (927). 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 decrease in shotgun rifle harvest in 2021 is likely due to poorer weather conditions on typical peak harvest days and the decline in the landowner season is likely due to the decline in permit issuance.

Archery and shotgun/rifle seasons accounted for 50.5% and 34.8% of all deer taken in 2021, while landowners and muzzleloader hunters accounted for 9.4% and 5.4% of all deer taken. Harvest varied considerably by season and town (Appendix 1). The decline in the 2021 deer harvest was primarily attributed to a decline in permit sales and poor weather conditions during the first couple months of the archery season.

A Junior Deer Hunter Training Day was established in 2003 for youth hunters. The training period 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 40 deer (Table 3).

Table 3. Deer harvested during Connecticut's regulated hunting seasons, 2020-2021.

Season		Harvest 2020	Harvest 2021	3-year Average Harvest (2018-2020)	% of Total 2021	% Change from 2020 to 2021	% Change 3-year Average to 2021
Archery							
State Land		675	577	590	6.4%	-14.5%	-2.1%
Private Land		4,928	3,779	4,829	42.1%	-23.3%	-21.7%
Crossbow[A]		3,253	2,554	3,076	28.5%	-21.5%	-17.0%
January[B]		200	172	206	1.9%	-14.0%	-16.5%
Crossbow		130	114	130	1.3%	-12.3%	-12.5%
	Subtotal	5,803	4,528	5,624	50.5%	-22.0%	-19.5%
Muzzleloader							
State Land		125	65	108	0.7%	-48.0%	-39.8%
Private Land		597	419	569	4.7%	-29.8%	-26.3%
	Subtotal	722	484	677	5.4%	-33.0%	-28.5%
Shotgun/Rifle							
State Land		613	587	735	6.5%	-4.2%	-20.1%
Private Land		2,816	2,532	3,102	28.2%	-10.1%	-18.4%
Revolver[C]		7	4	7	0.1%	14.3%	9.1%
Muzzleloader[C]		26	25	25	0.2%	5.0%	-16.0%
Youth Hunting Days[C]		42	37	40	0.4%	-11.9%	-8.3%
	Subtotal	3,429	3,119	3,759	34.8%	-9.0%	-17.0%
Landowner		927	840	985	9.4%	-9.4%	-14.7%
	Total	**10,881**	**8,971**	**11,045**	**100.0%**	**-17.6%**	**-18.8%**

[A] *Included as part of private land archery total*
[B] *Refers to the January following harvest year listed.*
[C] *Included as part of private land shotgun/rifle total.*

Hunter Success

Hunter success rate was estimated by dividing total deer harvest by total permit issuance and multiplying by 100 (Table 4). Success rates may fluctuate annually, depending on weather conditions, timing of rain and snowstorms, fall acorn crops, and deer herd size. Archery season success rates fluctuated between 24.3% and 27.6% from 2004 to 2008. Archery 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. In 2017, archery success reached nearly 35% (34.7%), declined slightly in 2018 (31.3%), and increased again in 2019 (34.9%) and 2020 (34.1%). However, success rates in 2021 decreased for all hunting seasons (except state land shotgun season) compared to 2020, and still decreased for all seasons compared to the 3-year average. In 2021, archery hunters had the highest annual success rate (28.1%), followed landowner hunters (25.2%), and private land shotgun/rifle hunters (24.3%). Success rate for the combined muzzleloader seasons was 6.2%. Lower success rates are expected because the muzzleloader season occurs after the shotgun/rifle deer hunting seasons.

Table 4. Deer hunter success rates (%) in Connecticut, 2018-2021.

Season	2018	2019	2020	2021	3-year Avg. Success Rate (2018-2020)	Difference from 2020	Difference from 3-year Avg.
Archery							
Combined[1]	31.3%	34.9%	34.1%	28.1%	33.5%	-17.6%	-16.1%
Muzzleloader							
State Land	3.7%	3.5%	4.2%	2.3%	3.8%	-45.2%	-39.5%
Private Land	10.9%	10.3%	11.4%	8.5%	10.9%	-25.4%	-22.0%
Combined	8.4%	8.0%	8.7%	6.2%	8.4%	-28.7%	-26.2%
Shotgun/Rifle							
State Land[2]	11.7%	10.9%	9.7 %	10.0 %	10.8 %	3.1%	-7.4%
Private Land	30.9%	26.4%	25.8%	24.3%	27.7%	-5.8%	-12.3%
Combined	24.6%	21.5%	19.9%	19.1%	22.0%	-4.0%	-13.2%
Landowner	28.1%	28.4%	27.0%	25.2%	27.8%	-6.7%	-9.4%
Average [3]	**24.4%**	**24.8%**	**23.7%**	**20.6%**	**24.3%**	**-13.1%**	**-15.2%**

[1] *Data available only for state and private land combined.*
[2] *State Land A and B was combined in 2020, and was recalculated for previous years.*
[3] *Average is based on total number of deer harvested/total number of permits issued.*

Harvest on state land lottery/controlled hunt areas varied considerably by area, with 25 areas exceeding 10 deer harvested/mi^2 in 2021 compared to 26 areas in 2020 (Appendix 2). Controlled hunts, which occur on large pieces of privately-owned land, play an important role in deer management with the harvest opportunities they provide. A few examples of harvest and success rates are provided below.

Yale Forest (Controlled Hunt 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 2021 controlled hunt, 23 deer were harvested for a 13% success rate.

Bristol Water Company (BWC; Controlled Hunt 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 2021 controlled hunt, 13 deer were harvested for an 18% success rate.

Centennial Watershed State Forest (formerly known as Bridgeport Hydraulic Company; Controlled Hunt 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 2021 controlled hunt, 82 deer were harvested for a 26% success rate.

MDC Nepaug Reservoir (Controlled Hunt Areas 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 2021, Area 58 was open to shotgun hunting only, where 18 deer were harvested for a 43% success rate.

MDC Barkhamsted Reservoir (Controlled Hunt Area 64A and 67A): In 2014, MDC (Metropolitan District Commission) contacted the Wildlife Division and expressed concern about impacts of deer on forest regeneration at Barkhamsted Reservoir. This resulted in the establishment of two controlled deer hunts, one in 2016 on the east side (Area 64A – 4,282 acres) and a second in 2017 on the west side (Area 67A – 3,700 acres). To document the impacts of deer on forest regeneration and health, deer exclosures were constructed at four different sites. The vegetation has been monitored annually since 2016. During the past four years, research has shown that oak seedlings within the fence are healthier and twice the height of the unfenced oaks, primarily due to protection from deer browsing. Although deer continue to impact forest regeneration, the reduction in deer numbers has improved the health of the MDC forests. During the 2021 controlled hunt, 19 deer were harvested for a 24% success rate.

Bluff Point Coastal Reserve State Controlled Removal: Controlled hunts and DEEP deer removals at Bluff Point Coastal Reserve in Groton have been implemented over the past 23 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 2020, the deer population was estimated to be 44 deer. In February 2021, 18 deer were removed by DEEP personnel for a 100% success rate.

Deer Management Zones

Deer Management Zones (DMZs) were established because deer populations vary across the state. Management strategies in each zone may vary depending on population status. Data from hunter surveys, regulated deer harvests, and total deer mortality have been recorded and evaluated by DMZs (Figure 2) in an effort to better manage the statewide deer population. Current population status and long-term trends are analyzed for each DMZ. This approach facilitates the assessment and management of regional deer populations.

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, in 2021 we emailed deer hunters and asked them to complete an online hunter survey. A total of 4,136 hunters responded for a 30% response rate.

Figure 2. Connecticut's Deer Management Zones, 2021.
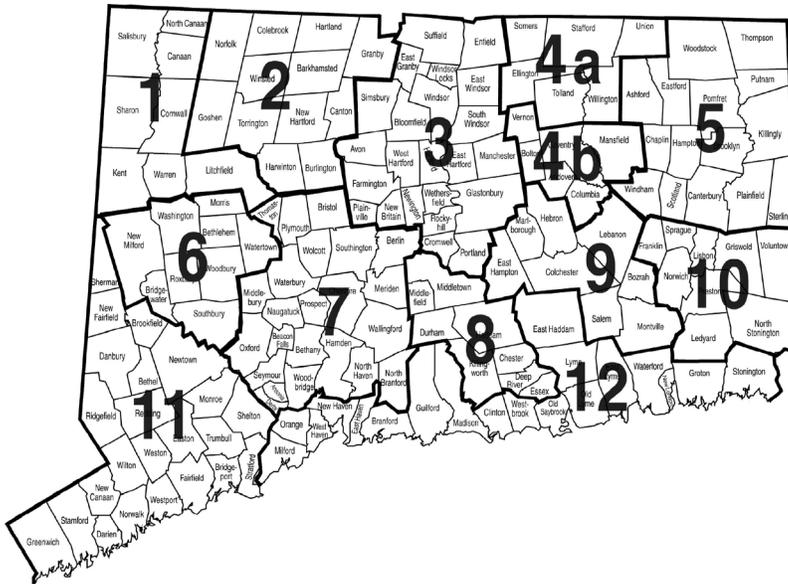
Shotgun/Rifle Season

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 2021 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 5). In general, higher hunter success rates suggest higher deer density. Of the 13 management zones, most firearms hunting (40%) occurred in four zones (1, 2, 5, and 9). Highest private land deer harvests were reported for DMZs 1, 5, 9, and 10. DMZ 4B had the highest deer harvest per square mile (1.3), while zone 4B and 9 had the greatest density of hunters (3.4 per square mile). Hunter success rate was also highest in DMZ 4B (38%), while success in zone 2 and 4A was the lowest (15 and 14%).

The trend in hunter success rates by zone has varied over the past 3 years (Table 6). Although hunter success has been variable due to the abundance of acorns and weather, many DMZs have continued to produce relatively high hunter success rates over the past 3 years (Table 6).

Table 5. Zonal hunter numbers, harvest, and success rates for private land during the 2021 shotgun/rifle 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	133	7.8%	814	230	344.59	0.7	2.4	28%
2	155	9.1%	949	145	410.69	0.4	2.3	15%
3	99	5.8%	606	190	273.33	0.7	2.2	31%
4A	94	5.5%	576	80	213.5	0.4	2.7	14%
4B	67	3.9%	410	155	120.66	1.3	3.4	38%
5	240	14.1%	1469	466	445.94	1.0	3.3	32%
6	104	6.1%	637	188	260.03	0.7	2.4	30%
7	110	6.5%	673	192	373.08	0.5	1.8	29%
8	87	5.1%	533	123	169.11	0.7	3.1	23%
9	156	9.2%	955	219	279.39	0.8	3.4	23%
10	127	7.5%	778	215	244.36	0.9	3.2	28%
11	100	5.9%	612	132	291.53	0.5	2.1	22%
12	121	7.1%	741	197	358.39	0.5	2.1	27%
Total	**1,700**	**100.0%**	**10,408**	**2,532**	**3,785**	**0.7**	**2.8**	**24%**

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

Table 6. Zonal comparisons in private land shotgun/rifle harvest, hunter distributions, and success rates, 2019-2021.

Zone	Area (sq. miles)	Deer Harvest/Sq. Mile			Hunters/Sq. Mile			Hunter Success Rate (%)		
		2019	2020	2021	2019	2020	2021	2019	2020	2021
1	344.6	0.7	0.8	0.7	2.5	2.5	2.4	30	33	28
2	410.7	0.3	0.3	0.4	2.5	2.8	2.3	12	12	15
3	273.3	0.7	0.8	0.7	2.8	2.6	2.2	23	29	31
4A	213.5	0.5	0.4	0.4	2.4	3.1	2.7	20	14	14
4B	120.7	1.4	1.5	1.3	4.0	3.8	3.4	36	41	38
5	445.9	1.3	1.1	1.0	3.5	3.6	3.3	36	30	32
6	260.0	0.8	0.8	0.7	2.9	1.7	2.4	27	48	30
7	373.1	0.6	0.6	0.5	2.0	2.0	1.8	29	29	29
8	169.1	0.9	0.7	0.7	3.4	5.3	3.1	27	14	23
9	279.4	0.9	0.9	0.8	3.7	3.4	3.4	26	27	23
10	244.4	1.0	0.9	0.9	3.2	3.8	3.2	31	24	28
11	291.5	0.5	0.6	0.5	2.9	2.3	2.1	18	27	22
12	358.4	0.7	0.6	0.5	2.8	2.4	2.1	27	26	27
Total	**3,785**	**0.8**	**0.7**	**0.7**	**2.9**	**2.9**	**2.8**	**26**	**26**	**24**

Archery Season

Deer hunters were asked on the hunter survey, "In what zone do you do most of your archery hunting?" The percent of hunters in each DMZ was multiplied by total number of archery permits issued in 2021 to estimate total number of hunters by zone. Bowhunter success rates in 2021 were highest in zones 4B, 7, and 11 and lowest in zones 2 and 4A. Success rates over the past few years have been similar for most zones (Table 7). Presence of Hemorrhagic Disease in 2020 appeared to have little impact on hunter success in DMZ 11 in 2021.

Table 7. Zonal comparisons of archery season success rates, 2018-2021.

Zones	Zone Hunted Archery[A]	% of Hunters Answered Question[A]	Estimated # of Archery Hunters[A]	Harvest	Hunter Success Rate 2018	2019	2020	2021
1	123	5.8%	937	246	31.9	37.8	38.1	26.3
2	175	8.3%	1,333	198	17.5	16.9	18.3	14.9
3	153	7.2%	1,165	338	24.8	25.4	29.9	29.0
4A	124	5.9%	944	180	23.6	31.8	19.9	19.1
4B	84	4.0%	640	204	33.4	39.3	31.7	31.9
5	213	10.1%	1,622	480	34.1	38.6	31.7	29.6
6	108	5.1%	823	218	25.6	26.9	32.7	26.5
7	235	11.1%	1,790	540	28.3	38.2	41.7	30.2
8	116	5.5%	884	206	32.8	35.6	22.6	23.3
9	147	7.0%	1,120	248	32.1	33.9	27.8	22.1
10	106	5.0%	807	228	27.3	39.4	32.1	28.2
11	328	15.5%	2,498	834	39.3	33.9	51.6	33.4
12	201	9.5%	1,531	436	45.7	41.2	41.3	28.5
Total	**2,230**	**100.0%**	**16,094**	**4,356**	**32.2**	**33.8**	**34.1**	**27.1**

[A] *Based on hunter survey question asking hunters which zone they primarily "archery" hunt in.*

Archery Observations, Harvest, and Effort

To obtain additional information beneficial to zonal deer management, successful 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." 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 (September 15 – October 15) 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 to 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 10).

Table 8. Hunter observations and harvest ratios reported during the first month of the archery season in Connecticut, 2018-2021.

Age-sex	First Month of Archery Season (Sept. 15-Oct. 15) Observation % 2018	2019	2020	2021	Harvest % 2018	2019	2020	2021
Bucks	19%	20%	23%	23%	39%	40%	42%	42%
Does	56%	51%	50%	51%	50%	48%	48%	48%
Fawns	25%	29%	27%	26%	11%	12%	10%	10%

Weekend Archery Hunting

Prior to 2015, archery hunting was only allowed on Saturdays. Beginning in 2015 archery hunting was permitted on private land on Sundays in all zones except 2, 3, and 4A, and then in all zones in 2018. Comparing the percent of archery deer harvested on weekends from 2014 to now, there has been about an 8-10% increase in harvest on weekends from before to after Sunday hunting was allowed (Table 9).

Table 9. Weekend harvest on private land during the archery season in Connecticut, 2014-2021.

Weekend Archery Harvest (Sept. 15-December 31) Private Land								
Year	**2014[1]**	**2015[2]**	**2016[2]**	**2017[2]**	**2018[3]**	**2019[3]**	**2020[3]**	**2021[3]**
Percent Harvest	29%	37%	37%	37%	40%	44%	37%	38%

[1] *Hunting permitted on Saturday only.*
[2] *Hunting permitted on Saturday and Sundays in all zones except 2, 3, and 4A.*
[3] *Hunting permitted on Saturday and Sundays in all zones.*

In 2021, archery hunters were asked about "How frequently they hunted on the weekend". A little over a third of archery hunters (38%) indicated they hunted Saturday and Sunday, 23% hunted one or the other depending on personal time, 18% hunt Saturdays only, 12% hunt one or the other depending on the weather, 7% do not hunt weekends, and 2% hunt Sundays only. Based on the survey, the majority of archery hunters hunted 1 to 2 Sundays a month (avg. 2.3 Sundays) during the 2021 season, slightly more than in 2020 (avg. 1.7 Sundays).

Table 10. 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, 2019-2021.

DMZ	Deer Harvested and Observed/Hour														
	Reported on Day of Harvest														
	First Month of Archery Season (Sept. 15-Oct. 15)														
	2019				**2020**				**2021**				**Δ[3]**	**Δ[3]**	**Δ[3]**
	n	**D/hr[1]**	**F:D**	**H/hr[2]**	***n***	**D/hr[1]**	**F:D**	**H/hr[2]**	***n***	**D/hr[1]**	**F:D**	**H/hr[2]**	**D/hr[1]**	**F:D[4]**	**H/hr**
1	70	1.36	0.51	0.31	95	1.27	0.38	0.35	73	1.23	0.35	0.35	-0.04	-0.03	0.00
2	53	1.09	0.41	0.38	69	0.96	0.43	0.34	43	1.11	0.53	0.37	0.15	0.10	0.03
3	93	1.05	0.56	0.36	126	1.06	0.66	0.36	68	1.17	0.58	0.43	0.11	-0.08	0.07
4A	81	0.87	0.50	0.32	66	1.10	0.42	0.40	41	0.76	0.71	0.31	-0.34	0.29	-0.09
4B	78	1.12	0.42	0.39	105	1.14	0.62	0.34	41	1.32	0.67	0.41	0.18	0.05	0.07
5	205	1.14	0.53	0.37	251	0.95	0.51	0.31	121	1.07	0.75	0.35	0.12	0.24	0.04
6	68	1.13	0.43	0.41	87	1.14	0.50	0.36	45	1.22	0.84	0.37	0.08	0.34	0.01
7	198	1.07	0.63	0.37	217	1.08	0.62	0.36	127	1..08	0.50	0.38	0.00	-0.12	0.02
8	67	1.09	0.61	0.39	80	1.16	0.52	0.32	53	1.01	0.50	0.36	-0.15	-0.02	0.04
9	99	1.16	0.52	0.39	107	1.09	0.60	0.35	61	0.86	0.50	0.33	-0.23	-0.10	-0.02
10	85	1.11	0.65	0.36	103	1.17	0.49	0.32	57	0.88	0.33	0.31	-0.29	-0.16	-0.01
11	276	1.28	0.59	0.38	361	1.13	0.56	0.33	166	1.06	0.57	0.32	-0.07	0.01	-0.01
12	179	1.19	0.60	0.41	179	1.03	0.54	0.35	98	1.22	0.54	0.34	0.19	0.00	-0.01
Total	1,552	1.13	0.54	0.37	1,846	1.09	0.53	0.35	994	1.07	0.57	0.36	-0.02	0.04	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 2020 to 2021.*

Overall Private Land Deer Harvest

The 2021 private land deer harvest was highest for DMZs 5, 7, and 11 (Table 11). 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 11). 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 decreased almost 20% from 2020 to 2021. Although the private land muzzleloader harvest was down 30% from 2020 to 2021, it only equated to 178 fewer deer, while a large part of the decline was from the archery harvest, which was down 23% from 2020 to 2021 equating to 1,149 fewer deer.

Long-term Zonal Changes

Most zones have not required any changes over time; however, others have required more management efforts. In DMZ 4, a decreasing trend prompted harvest restrictions on female deer in this zone in 1999. During the shotgun/rifle and muzzleloader seasons, the antlerless-only tag on 2-tag permits was not valid in DMZ 4. In 2002, deer populations appeared to be stable in the southern portion, but not in the northern portion of DMZ 4. Following the 2002 season, 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). These changes increased private land shotgun/rifle hunter success in DMZ 4B but have yet to change hunter success in DMZ 4A (Figure 3). Similarly, increasing predator populations (mainly bear and bobcat) in DMZ 2 have impacted the deer population, resulting in persistently low private land shotgun/rifle hunter success, which prompted harvest restrictions on harvest of female deer beginning in 2016. During shotgun/rifle and muzzleloader seasons, the antlerless-only tag on 2-tag permits was not valid. With little evidence of change in hunter success the past few years, other restrictions may be considered in the future.

Table 11. Private land deer harvest for all seasons (excluding landowner) in each of Connecticut's Deer Management Zones, 2011-2021.

	Year										
Zone	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
1	721	728	558	521	472	573	551	609	545	585	485
2	374	395	356	296	273	294	365	326	313	360	335
3	487	529	491	536	426	516	566	520	493	626	529
4A	276	348	320	275	228	295	330	319	335	263	226
4B	470	547	486	496	357	452	488	471	431	462	351
5	1,400	1,375	1,345	1,163	902	1,062	1,244	1,251	1,197	1,072	924
6	500	584	557	490	416	488	528	503	483	534	433
7	797	771	765	747	743	838	880	806	897	911	723
8	473	549	489	398	342	368	423	408	418	358	295
9	718	721	721	685	511	580	701	697	623	563	460
10	632	662	533	546	433	471	606	558	528	493	428
11	2,022	1,923	1,921	1,505	1,321	1,538	1,666	1,440	1,148	1,329	922
12	1,324	1,370	1,251	1,017	781	916	1,212	1,116	956	786	619
Total	**10,194**	**10,502**	**10,748**	**8,675**	**7,205**	**8,391**	**9,560**	**9,024**	**8,367**	**8,342**	**6,730**
% Change	**9.3%**	**3.0%**	**2.3%**	**-19.3%**	**-16.9%**	**16.5%**	**13.9%**	**-5.6%**	**-7.3%**	**-<1.0%**	**-19.0%**

Figure 3. Private land shotgun/rifle hunter success in Deer Management Zones 2, 4A, and 4B, 1998-2021.

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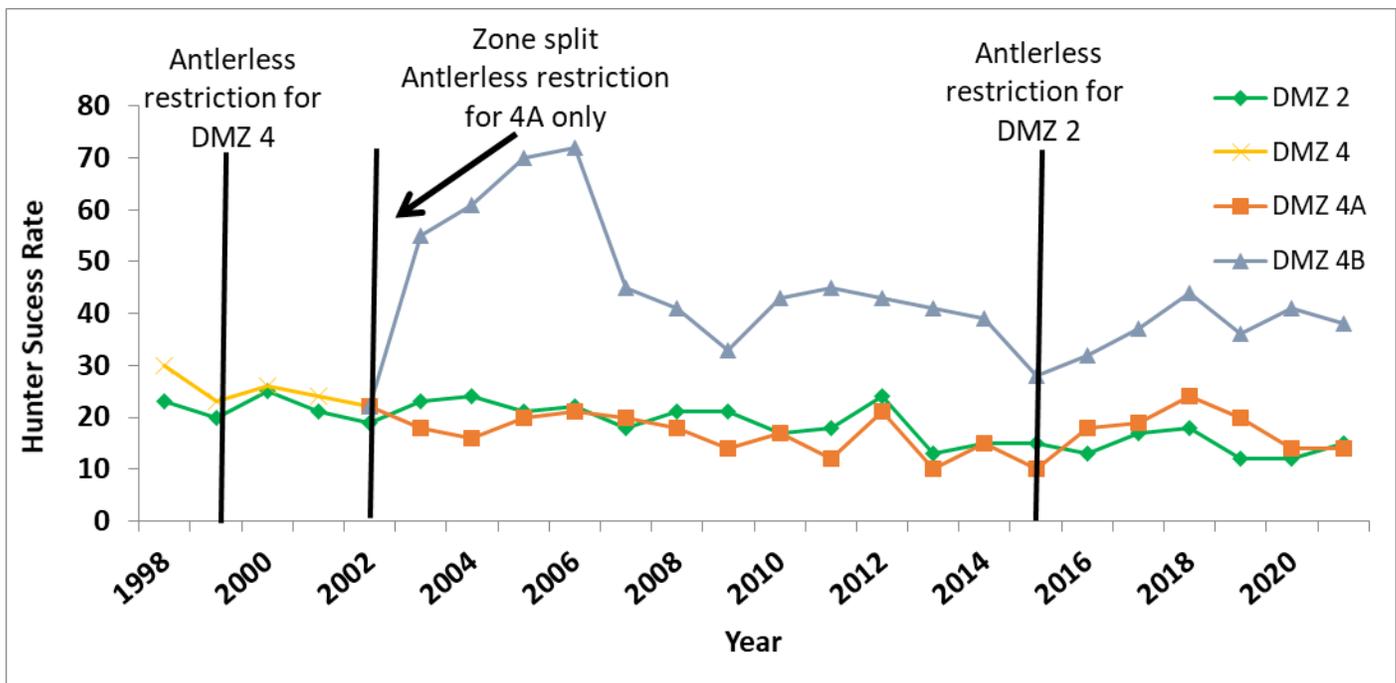
Archery hunter success in DMZ 2 has changed little over time (Figure 4), with DMZ 2 and 4A being the lowest in the state when looking at it on a zonal basis. (Table 7). What appears to be an increase in DMZ 2 and 4A in 2009 is an artifact of the change in reporting requirements from kill report cards to the current online/telephone reporting system (Figure 4). It is believed that no change occurred in DMZs 11 and 12 because there was an incentive to report harvest due to the replacement tag program. The decrease in success seen in DMZs 2 and 4A in 2015 (Figure 4) was due to it being a year with the highest acorn abundance. It is unclear about the decline in success in DMZ 4A in 2020 and 2021. In addition to deer abundance, acorn abundance and weather can have a large impact on hunter success.

Figure 4. Archery hunter success in Deer Management Zones 2 and 4A, 2002-2021.
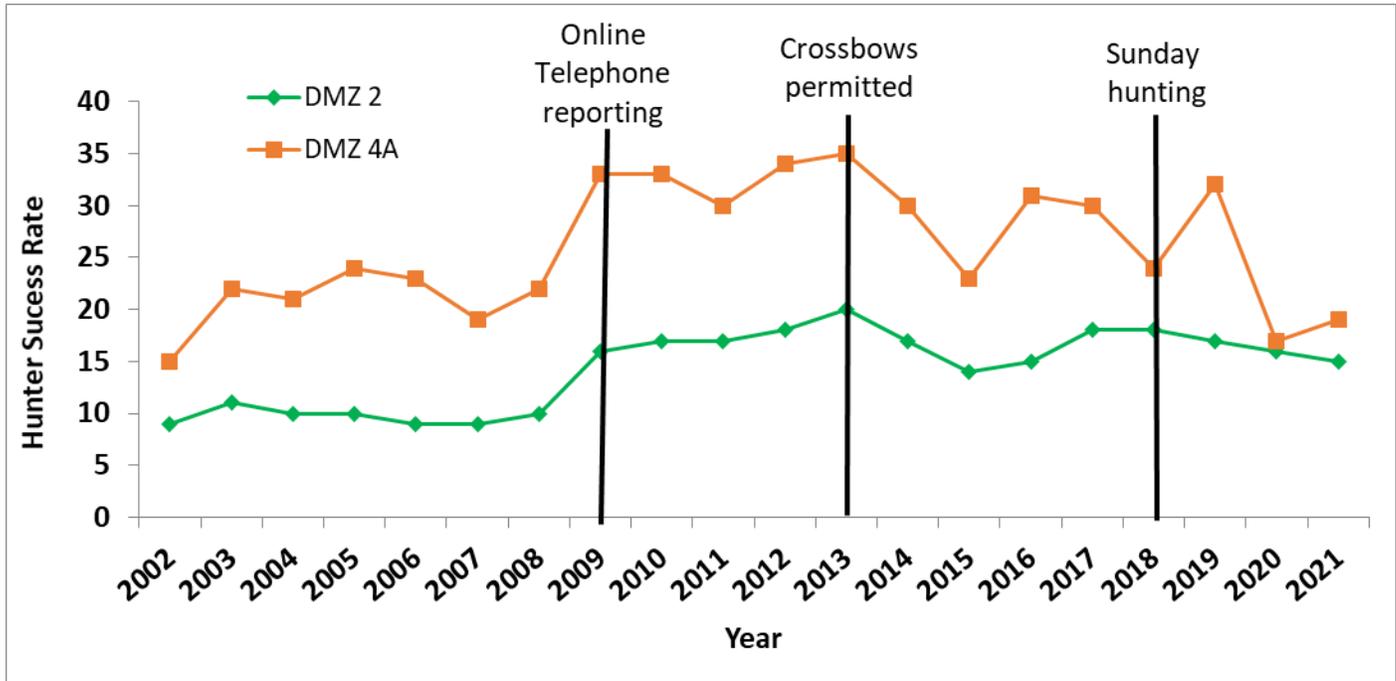
Replacement Tags

In addition to the initial permits that come with tags in areas with substantial deer problems, 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 has now declined to just below 500). The buck harvest has steadily increased over the years with the addition of the earn-a-buck program in 2005. The number of roadkills in DMZ 11 has shown a steady decline since 1998 (Figure 5). 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), with the past three years averaging around 0.7 females per male (Figure 6).

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Figure 5. Comparison of trends in roadkills and the antlered and antlerless deer harvests during the archery deer season in Deer Management Zone 11, 1995-2021.
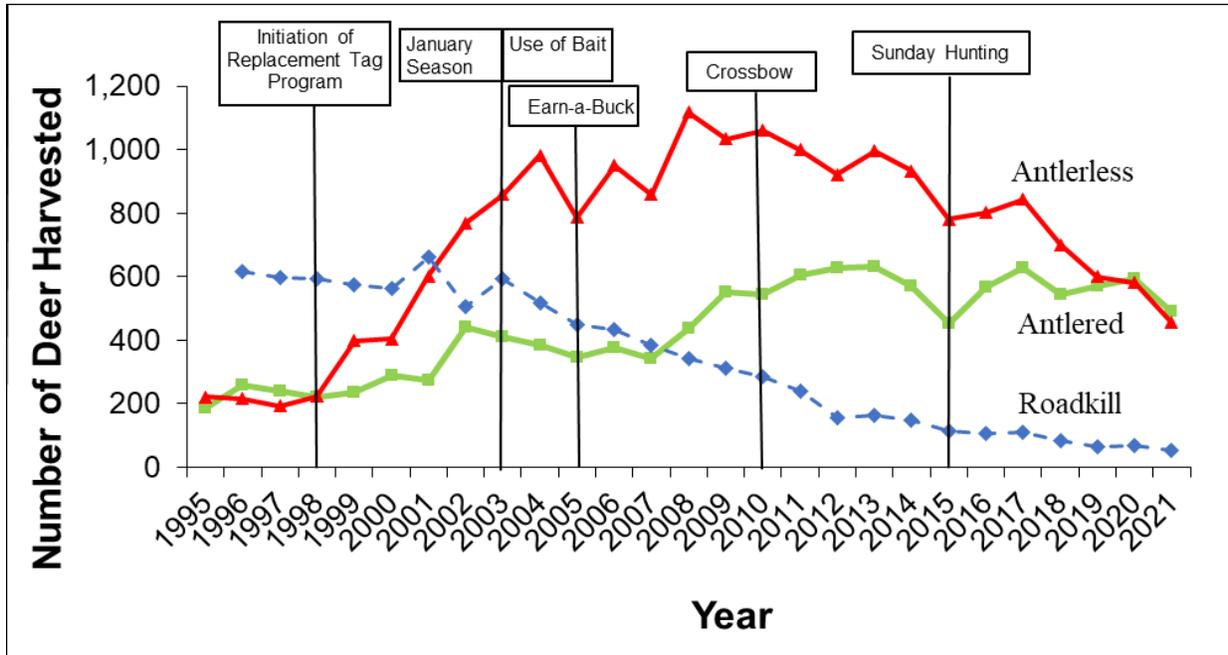
Figure 6. Changes in sex ratios of harvested deer from Deer Management Zone 11 after implementing various management strategies during the archery season, 1995-2021.
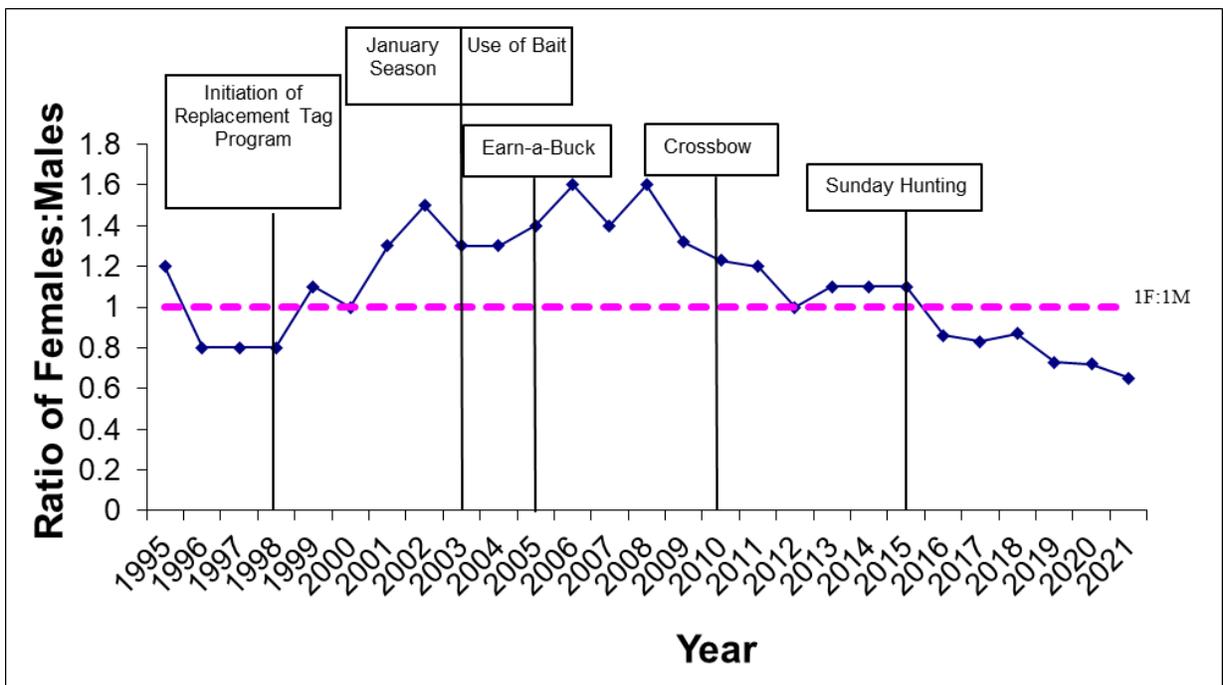
Deer Harvest Sex Ratios

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 12). In zone 2 and 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 were similar in 2019 and 2020 but favored males in 2021 (Table 13). In 2021, 42% (3,686) of the total regulated deer harvest (excluding crop damage harvest) was comprised of antlerless deer. A significant proportion of the harvest included females, which contributes to population control efforts (Appendix 3).

Table 12. Sex ratios (male:female) and antlered to antlerless ratios of deer harvested during the regular hunting season and through crop damage in 2021.

	Muzzleloader	Shotgun/Rifle	Archery	Landowner	Crop Damage	Total
Male:Female	1.1:1	2.2:1	1.7:1	2.6:1	1.1:1	1.8:1
Antlered:Antlerless	0.7:1	1.5:1	1.3:1	1.9:1	0.8:1	1.4:1

Table 13. Sex ratios (male:female) of deer harvested during Connecticut's regulated hunting seasons, 2019-2021.

2020		2021		Males per Female			3-year Average
Males	**Females**	**Males**	**Females**	**2019**	**2020**	**2021**	**(2019-2021)**
6,497	4,230	5,747	3,052	1.5:1	1.5:1	1.9:1	1.6:1

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, 39% in 2017, 39% in 2018, 36% in 2019, 34% in 2020, and 33% in 2021. Of all antlered bucks harvested (1 or 2 points, 3 or 4 points, 5 or 6 points, 7 or 8 points, 9 or 10 points, or >10 points), 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).

Figure 7. Number of antler points on bucks collected by the telecheck/online reporting system during the shotgun/rifle hunting season in Connecticut, 2018-2021.
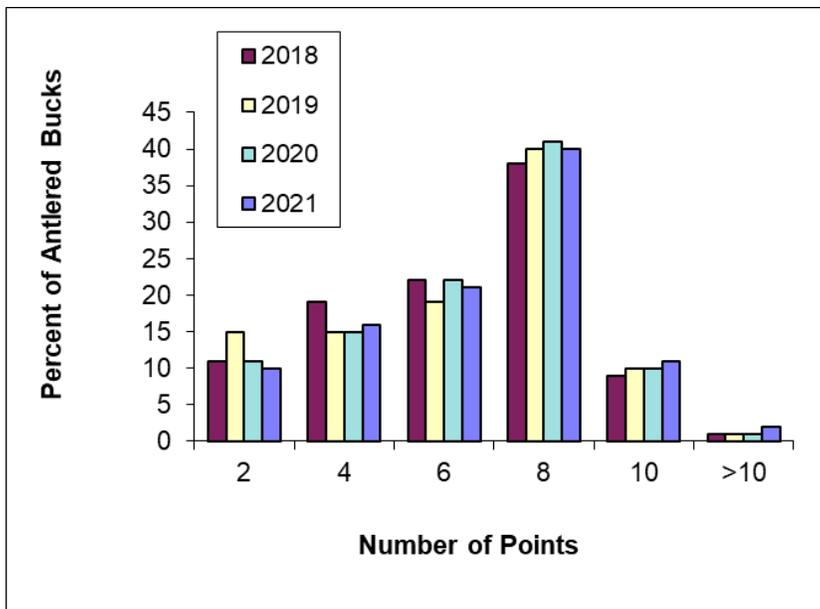
Non-hunting Deer Mortality

Non-hunting deer mortality, particularly roadkills and crop damage, 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 2021, 832 non-hunting deer mortalities were reported (Appendix 4). Of those, 417 were killed in deer-vehicle collisions. This equates to just over an average of 1 deer being killed per day on Connecticut roads and highways. Deer-vehicle collisions accounted for 91% of all reported non-hunting mortality (excluding crop damage; 373) in 2021. Non-hunting mortality comprised 8.4% of the total reported deer mortality in Connecticut, including crop damage harvest (Appendix 4). 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 amount of roadkills in 2021 was 2,502. At one time, DMZ 11 accounted for as much as 21% of all roadkills (2000) in Connecticut. A steady decline has been observed in the past 10 years, with 13.5% of all road-killed deer being reported in DMZ 11 (Fairfield County, Figure 2) in 2021. The number of roadkills per square mile has also declined but has been stable over the past few years (Appendix 5). The amount of roadkills in DMZ 11 has shown a steady decline since implementation of the replacement tag program, extension of the archery season, and allowing the use of bait on private land (Figure 5).

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 (https://portal.ct.gov/DEEP/Wildlife/Nuisance-Wildlife/Deer-Crop-Damage-Permit-Program) 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 2021 calendar year, 373 deer were taken with crop damage permits (Appendix 6). From 1993 to 2020, annual deer removal with crop damage permits fluctuated between 239 and 946 deer. Deer removals in DMZ 3 and 7 accounted for 30% of deer removed with crop damage permits in 2021. Crop damage removals increased steadily from May to October, with 61% of the annual removals occurring in September and October (Figure 8). This increase is typically thought to reflect increasing interest in hunting as fall approaches rather than any damage-related trend. An additional 10 deer were killed in November and December using jacklight permits, which is allowed only under special circumstances.

Figure 8. Crop damage deer removals by month, 2021.
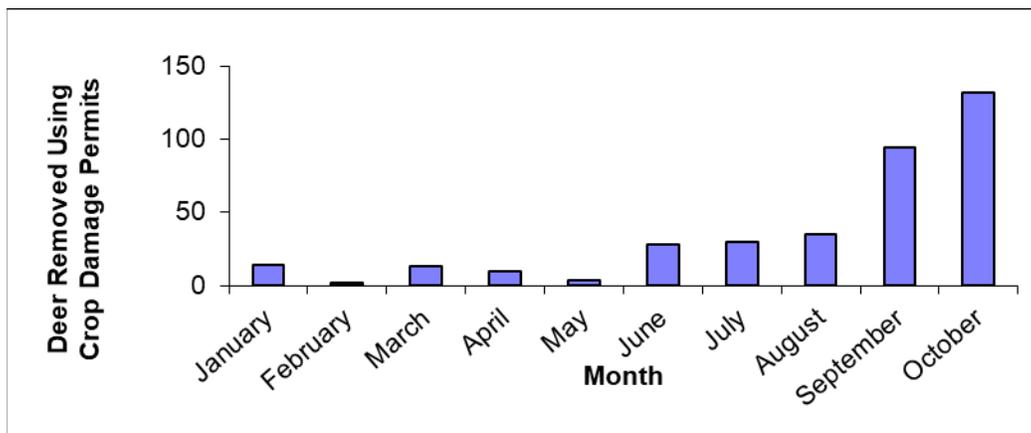
Population Trends

Based on aerial deer surveys conducted between 1975 and 2006 and population reconstruction models applied between 2011-2020, a statewide population estimate was calculated. Using these methods, over the past 20 years the population peaked at 152,000 in the early 2000s and declined some in the later 2000s (110,000) (Figure 9). Keep in mind that both methods are only estimates; aerial surveys are heavily impacted by forest type and snow cover; and the population reconstruction model uses variables based on reported hunter harvests and sightings of fawns, does, and bucks collected at time of harvest reporting, along with reported roadkills. A correction factor based on research has been applied to all variables.

The 2021 survey included the question, "How would you describe the status of the deer population in the zone you hunt most 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-nine percent of the hunters who responded to the survey believed that the population was declining, 49% believed it was stable, and 12% believed it was increasing. DMZs 4A and 5 had the highest average rank (2.9 and 2.8) (Figure 10), indicating that the population was mainly stable. In general, hunters perceived that deer populations are relatively stable or decreasing slightly in most zones over the past 3 years. Hunter perceptions seem to align with population estimates, which align with management objectives in several zones.

Figure 9.   Statewide deer population estimates based on aerial surveys (1975-2006) and population reconstruction models (2011-2021) in Connecticut.
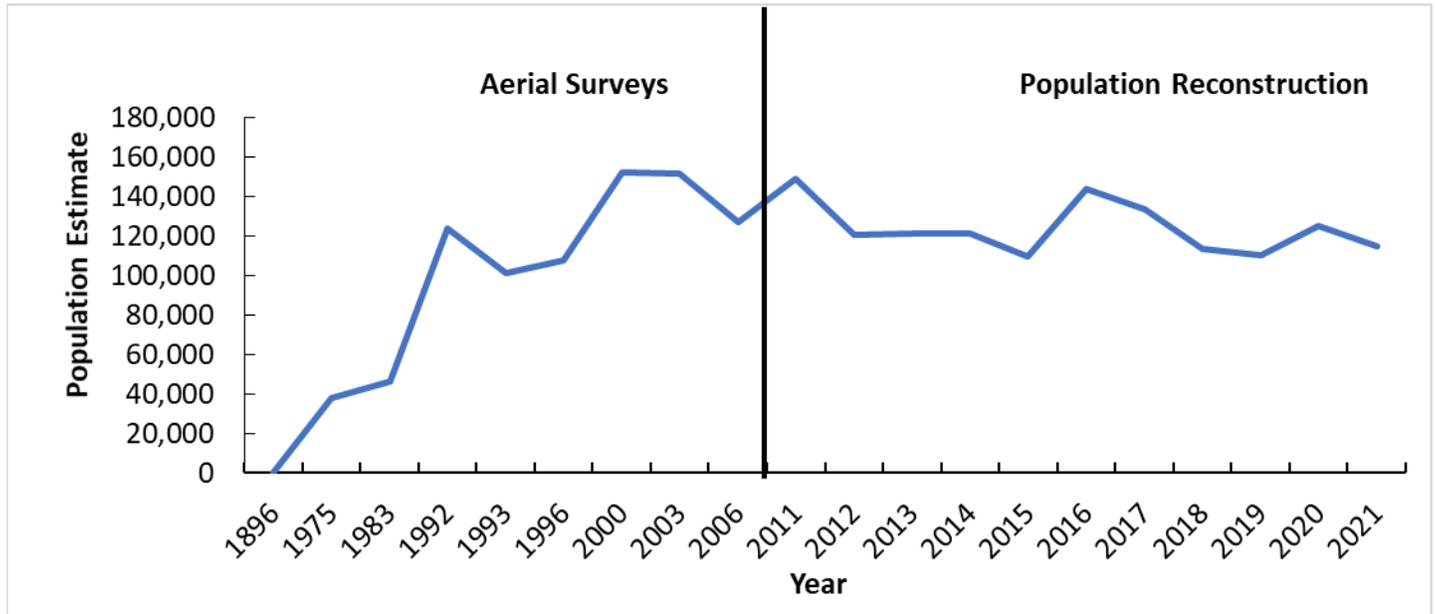
Figure 10. Perception of zonal deer population trends (average rank) by Connecticut's deer hunters, 2019-2021.
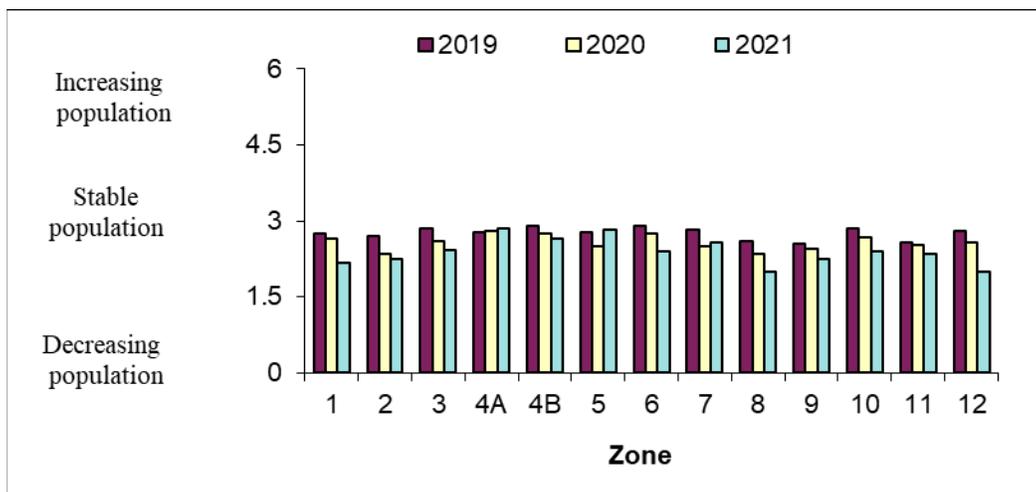
Based on the survey question "How many bear and bobcat have you observed and where", observations and distribution of predators have continued to rise for the past few years, indicating that the predator population has continued to increase. Hunters reported 4,910 bear sightings in 121 towns and 6,210 bobcat sightings in 161 towns in 2021 (Table 13). A 4-year study (2012-2015) assessing fawn mortality in northwest Connecticut indicated that it was primarily caused by bears (37%) and bobcats (40%). Survival rate of fawns based on that study was 36%.

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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 2021, 47% of the hunters who responded to the survey ranked the fall acorn crop as moderate, 31% as abundant, 19% as scarce, and 3% saying there were none. DMZs 4A and 4B had the highest average rank (4.33 and 4.52), while DMZs 1 and 6 had the lowest average ranks (2.15 and 2.61) (Figure 11). On a scale of 0-6, the average rank statewide was 3.46. Substantial damage was caused to oak trees for 2 consecutive years by spongy (formerly known as gypsy) moth outbreaks (2018 and 2019), particularly in eastern Connecticut; spongy moth damage also occurred in western Connecticut over the past couple of years. The long-term implication on the oak trees is still unknown, although some recovery is evident based on surveys over the past few years in eastern Connecticut.

Figure 11. Perception of acorn crops (average rank) by Connecticut's deer hunters, 2018-2021.
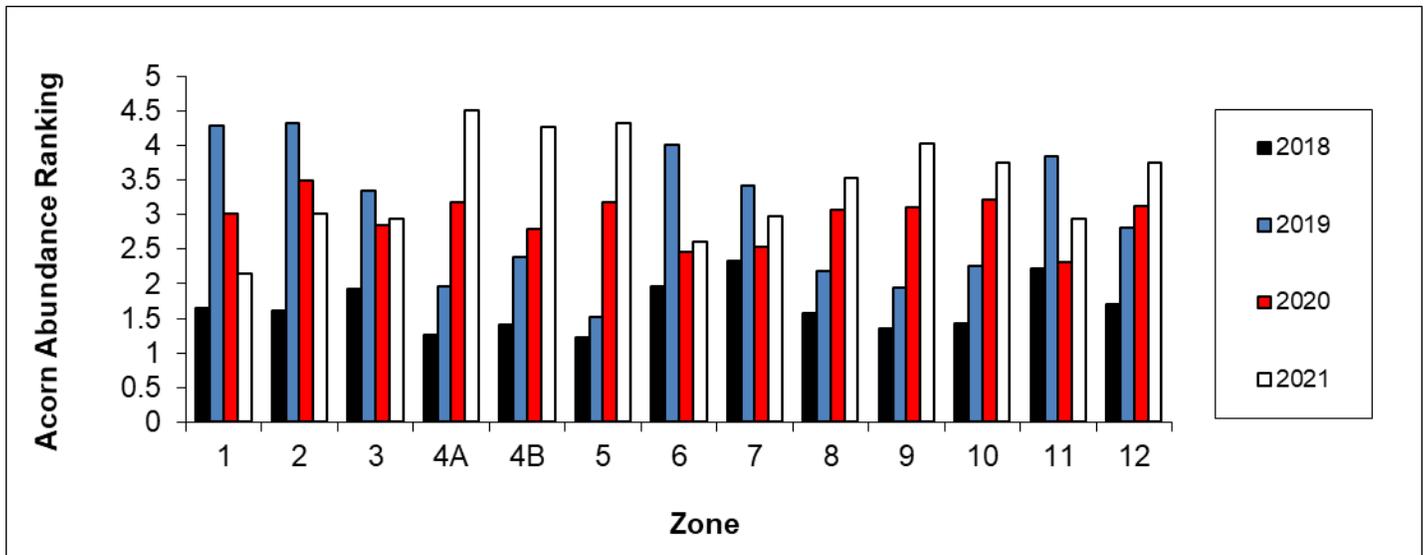
The past 29 years of data on acorn abundance and deer harvest rates suggest that a correlation exists between hunter success and acorn abundance (Figure 12). In 1993, when acorns were abundant, hunter success was one of the lowest recorded, and in 2004, when acorns were scarce, the hunter success rate 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. During the past couple of years, the lack of acorns has led to increased success rates. On average, the acorn crop statewide has been moderate in most years, scarce about every 5 to 6 years, and abundant every 4 years. In local areas, extensive spongy moth damage has resulted in limited acorn productivity and severely impacted many white oak stands, resulting in large areas with nothing but standing dead oak trees. Depending on the severity of damage that occurs in the coming years, the spongy moth outbreak could have a major impact on Connecticut's forested landscape for years to come.

Figure 12. Relationship between private land shotgun/rifle hunter success rates and fall acorn productivity, 1993-2021.
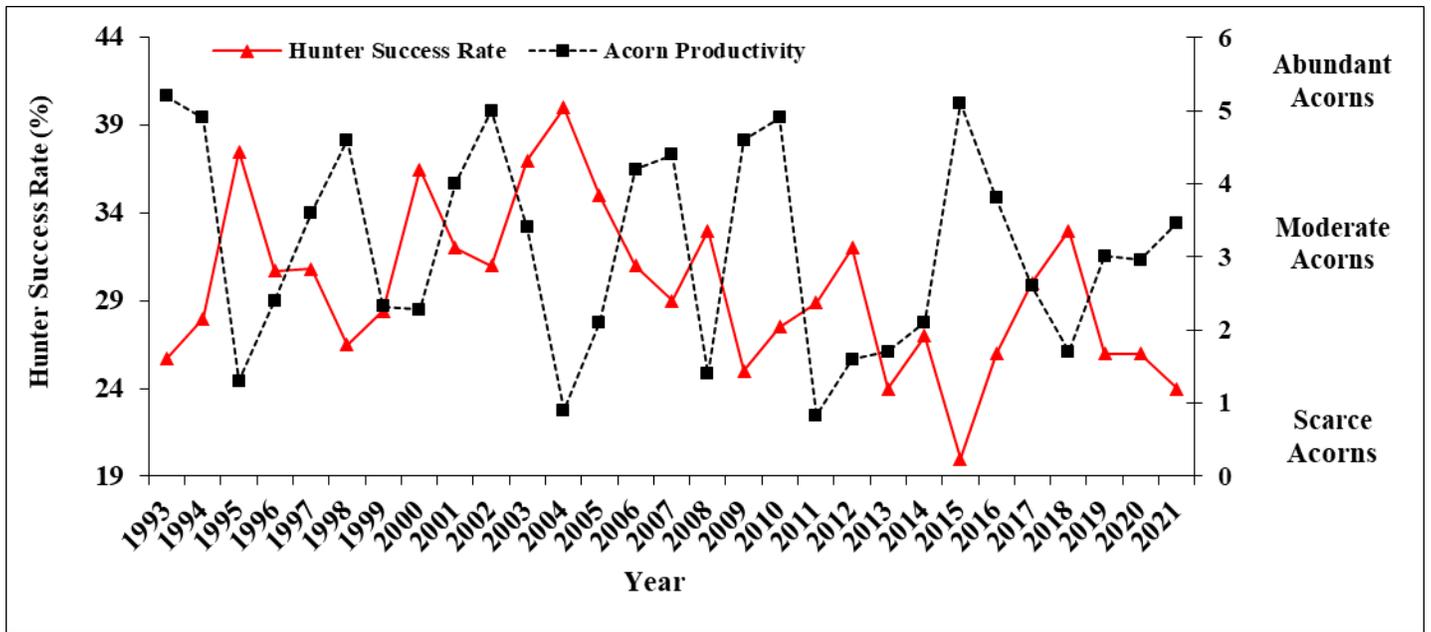
Deer Hunter Expenditures, Effort, Venison Calculations, and Opinions

Deer hunting-related expenditures contribute significantly to Connecticut's economy. Deer permit sales were down in 2021, generating $1,366,485 in revenue for the Connecticut General Fund, slightly less than in 2020 ($1,414,775). However, data collected from the annual deer hunter surveys indicated that Connecticut deer hunters spent an estimated $6,029,291 on deer hunting-related goods and services in 2021, up from the $5,705,600 spent in 2020.

In 2021, deer hunters spent a cumulative total of 449,937 days afield. Private land shotgun/rifle and state land muzzleloader hunters used the greatest percentage of available hunting days during those seasons (39% and 31% respectively). Archers and private land muzzleloader hunters used the next greatest percentage of days (23% and 24%). Typically, bowhunters have used a smaller percentage of available hunting days (13%) because the archery season is much longer than the firearms season. However, over the past of couple years, usage has increased, possibly due to the availability of having both weekend days as options or partly due to the COVID-19 pandemic.

On the deer hunter survey, hunters were asked if they had "more", "less", or "the same" amount of time to hunt this year compared to previous years due to issues surrounding the COVID-19 pandemic. The majority of hunters (63%) indicated they had the "same amount of time", 20% indicated they had "more time", and 17% indicated they had "less time". In 2021, Connecticut deer hunters collectively spent less time (50 days per deer taken), but more money ($672 per deer taken) compared to 2020 (51 days at $524 per deer taken). In 2021, hunters harvested an estimated 448,550 pounds (average 50 lbs. of meat/hunter; 200 tons total) of venison at an estimated value of $3,027,712 ($6.75/lb.).

From a hunter effort standpoint, it took a lot fewer days to harvest a deer during the 2021 archery season (15.8) than it did during the 2020 archery season (28.3 days/ deer harvested; includes successful and unsuccessful hunters). The 2021 season was more similar to 2019 (14.3 days/ deer harvested). The likelihood is that many hunters who had not spent much time archery hunting purchased permits in 2020 during the height of the COVID-19 pandemic and spent some time hunting without much success. This calculation is based on total number of hours divided by 8.

Hunters were asked "how satisfied they were with their Connecticut deer hunting experience in 2021". Excluding hunters who had no opinion (about 6%), over a third of hunters were moderately satisfied with their hunting experience (35%), a third were very satisfied (32%), and the remainder were slightly satisfied (16%) or not at all satisfied (17%), similar to opinions in 2020.

Hunters were asked, "what if anything affected their deer hunting season this year". A third of hunters reported "no affects" (28%), while many reported increased hunting opportunities because of "Sunday hunting" (17%), "access to new property" (10%), "COVID" (7%), and "able to hunt a new season" (5%). Others reported decreased hunting opportunities because of "limited time" (23%), "limited access" (14%), "health problems" (7%), and "COVID" (5%). Additional factors that affected their season were "lack of deer"

(25%), "bad weather" (11%), "disturbances from non-hunters" (11%), "other non-descript factors" (10%), "disturbances from other hunters" (9%), "travel distance" (6%), "limited finances" (4%), and "limited interest in hunting" (2%).

Hunters were asked "to select the top three reasons why they hunted from a list of choices". The primary reasons were "for food" (46%), "spend time outdoors" (39%), and "tradition/time with family" (23%). Other reasons included "for fun" (16%), "for management/conservation" (14%), "for trophies/antlers" (8%), "to help reduce deer damage" (2%), and "other" (2%).

Hunters were asked "what the primary reason is why they hunt in the zones in which they do". The primary reason for archers was "it is close to home" (43%) and "they have access to private land there" (42%), while for firearms and muzzleloader hunters the primary reason was "they have access to private land there" (33% and 27%) and "it is close to home" (33% and 26%). Other reasons for archery, firearms, and muzzleloader hunters included "have access to state land there" (8%, 6%, and 5%), "high deer densities there" (2%, 2%, and 1%), and "other" reasons (3%, 2%, and 2%).

Hunters who indicated they primarily hunted in DMZs 1, 2, 3, and 4A were asked their opinions about reducing the archery tag limit from 4 tags (2 antlerless/2 either sex) to two tags (1 antlerless/1 either sex). Hunters were split on their opinions about whether they supported that option or not, with 39% of hunters favoring the reduction, 41% not favoring a reduction, and 20% unsure.

Additional hunter comments on the survey were grouped into more specific categories/comments and included 24% requesting increased opportunities to hunt Sundays during various seasons, such as state land archery and firearms seasons; 24% mentioning predators (bears, bobcats, and coyotes) and the need for hunting/trapping seasons for bears and bobcats and expanding shooting options for coyotes; 20% believed the population was in decline; 11% mentioned reducing bag limits; 5% experienced conflicts with non-hunters (especially mountain bikers and dogs off leash); and 3% mentioned changes in season dates and expanding shooting hours (2%). Additional comments made on the survey were that lots of acorns available made it difficult to pattern deer (4%), weather was not good for hunting (2%), implement antler restriction (1%), increase tags (1%), increase public land access (1%), and complaints about the crop damage season (1%).

Twenty-four percent of hunters expressed concerns about predators. These concerns are consistent with findings from our fawn survival study in northwest Connecticut where black bears and bobcats had a major impact on fawn survival as previously mentioned. It is often requested that we "just allow a bear and bobcat season to reduce the predator population!" The answer to that statement can be quite complicated.

Black bears were considered to be extirpated from Connecticut by the mid-1800s, and by the mid-1900s, black bears were officially protected. Prior to the 1980s, reports of bears were rare, but by the mid-1980s, a resident population was evident (sightings of sows with cubs), and the population began increasing rapidly. Similarly, bobcat populations declined in portions of its range during the 1950s through the 1970s. In spite of limited information on the population status of bobcats, the species was reclassified as "protected" in 1972 to a guard against further population decline. As a result of those historic conditions, there are no state "statutes" or "hunting regulations" allowing either species to be harvested, making the management of both of these species extremely complicated. It is important to understand how this hierarchy of laws and regulations works.

The term "statute" refers to a "law" enacted by a legislative body of government in which wildlife is considered to be held in public trust by the state for the benefit of all its citizens. The laws govern how wildlife is to be used and protected. Currently, there is a statute in Connecticut regarding the illegal taking of bear and the penalties associated with it. To change a statute would require the Connecticut State Legislature to approve a bill to permit some form of bear hunting by farmers or the general public. In March 2022, a vote was rejected that would have permitted bears causing agricultural damage to be harvested.

Once a state law has been passed by the legislature, then the Department of Energy and Environmental Protection (DEEP) can carry out the law through the development of a "regulation". Currently, there are regulations stating there shall be no open season on black bear and bobcat, along with several other species, and a regulation stating there shall be no open trapping season for black bear and bobcat, along with several other species. These regulations can be modified or developed, which includes public hearings that allow citizens to participate in the process. During the regulatory process, input is taken from the public (who may support or oppose the proposed regulation), adding another layer of complexity to any type of management action. In order to change any regulation, there must be evidence or data to support it, such as how the population has changed over time.

That is where the information collected from hunter survey becomes an important component. As the number of days hunted before seeing a bear or bobcat decreases, it would indicate an increasing population (Table 14). This is a much better indicator than just total number of sightings as there is a "catch per unit effort" involved.

Table 14. Hunter sightings of bears, bobcats, and moose, 2012-2021.

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Bear Sightings[A]	100	73	63	30	32	27	27	28	24	10
Bobcat Sightings[A]	47	41	31	21	22	18	18	28	17	8
Moose Sightings[A]	1,027	718	841	524	562	458	507	564	512	472

[A] *Hunter sightings are reported as days hunted/one animal observed based on annual Deer Hunter Surveys.*

Although hunters have been concerned about bears and bobcats, they are not the only ones who have expressed concerns and have been reporting sightings. Many protected furbearer species are a frequent source of problems and concerns of the general public. The number of public bear and bobcat sightings has risen significantly as have incidents of these two species causing damage to property and livestock. Responding to phone calls, emails, and letters from persons experiencing problems caused by furbearers continues to be a frequent and time-consuming activity. Complaint levels and bear vehicle collisions are expected to continue increasing as bear population growth and range expansion continue as well. There is growing public safety concern as the populations continue to go unmanaged. Aggressive encounters between bears and humans are trending higher every year, and without the proper management tools (population management, ban on feeding), the DEEP cannot work towards reversing this trend. Currently, much of eastern Connecticut still remains uninhabited by bears, so as the population continues to expand into what is considered suitable habitat, conflicts between humans and bears are expected to increase and create more problems for beekeepers, farmers, pet owners, the general public, and motorists across the state.

As biologists for the Department of Energy and Environmental Protection, we are responsible for collecting and sharing scientific data, which is done in a format like this report. So, what can the citizens of Connecticut do? Start by learning more about the species from the DEEP website at https://portal.ct.gov/DEEP/Wildlife/Learn-About-Wildlife/Learn-About-Wildlife-in-Connecticut or a similar trustworthy site, and be a responsible homeowner by following all recommended courses of action when it comes to living with bears. If you are interested in changing existing laws, you need to follow the legislative process by contacting your local and state representatives.

Moose Sightings

An increasing moose population in Massachusetts led to an increased number of moose wandering or dispersing into Connecticut in the early 1990s. In an effort to monitor trends in moose sightings in Connecticut, a question was added to the deer hunter survey in 1996, "How many moose did you observe while hunting and in what towns". Totals included sightings by hunters who personally observed moose and those that were captured on trail cameras. Deer hunters reported personally observing 109 moose and captured an additional 125 on trail cameras in 28 towns in 2021, with sightings being reported in 105 different towns over the past 25-years. Sightings have been reported from 8 to 43 different towns each year (Figure 13). Moose were observed in Barkhamsted, Canaan, Canton, Colebrook, Cornwall, Goshen, Granby, Hartland, Harwinton, Kent, Norfolk, Salisbury, Simsbury, Suffield, Stafford, and Union for 6 of the last 10 years (Figure 13). Most of the towns where hunters report the greatest number of moose sightings occur along the Connecticut-Massachusetts border. In 2021, hunters spent roughly 472 days in the field for every moose observed, slightly less days than in 2020 when hunters spent roughly 512 days in the field for every moose observed (Table 14). The increase in moose sightings may be more related to an increase in trail camera use than a true increase in the population as all other indicators have shown a declining population throughout Connecticut and New England. Currently, Connecticut has no open hunting season for moose.

Figure 13. Moose sightings reported on deer hunter surveys, 1996-2021.
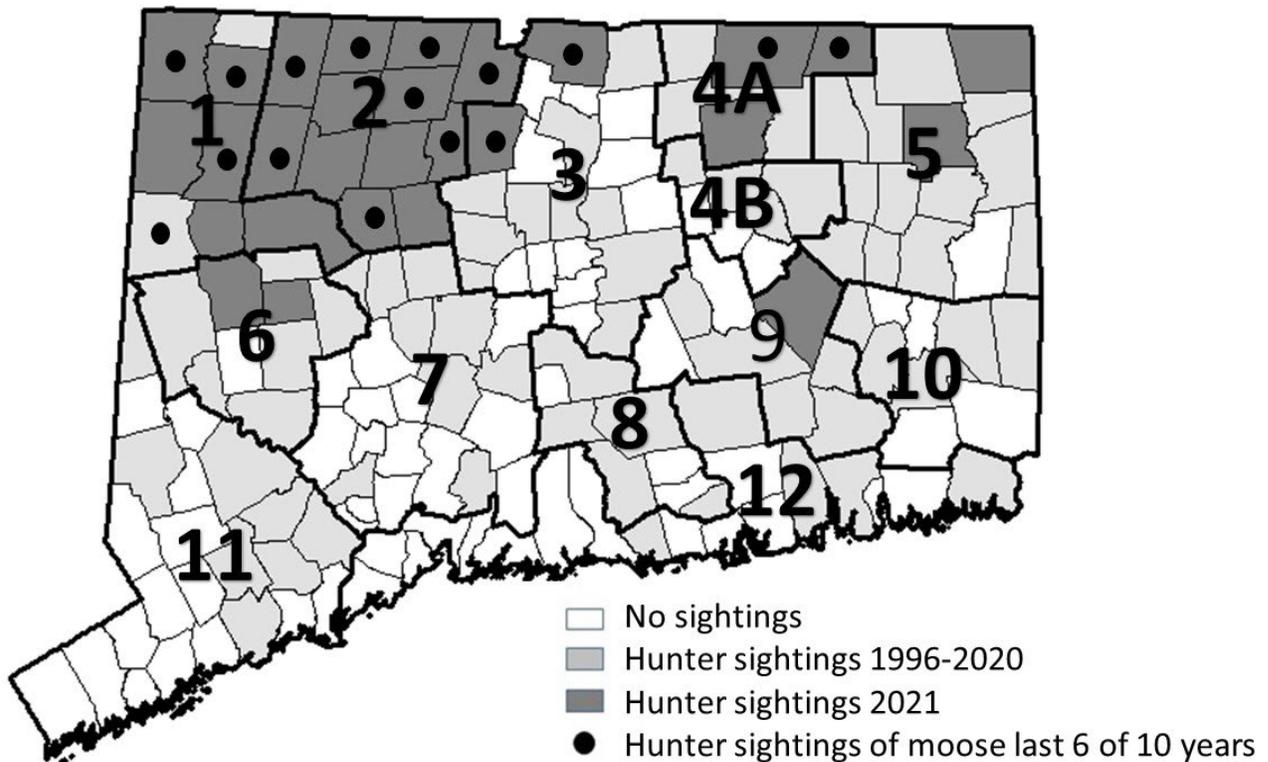
Conclusion

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. From 1992 through 2007, permit issuance 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 at the time. 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, and a decline in hunter numbers. 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, a harvest which had more than doubled is now beginning to decline while roadkills have continued to trend downward. Increased harvest opportunities appear to have stabilized deer populations in many areas of the state and population reconstruction models show a stable to declining population in recent years.

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 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 (https://portal.ct.gov/-/media/DEEP/wildlife/pdf_files/game/urbandeer07pdf.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 (https://portal.ct.gov/-/media/DEEP/wildlife/pdf_files/game/deeroptionspdf.pdf).

Mentor a New Hunter

Connecticut's deer hunters are an aging population (54% are ≥ 50 years old) as hunter numbers are starting to decline, with fewer hunters left to pass on the legacy. Without seasoned hunters passing on their skills, it will be more challenging for new hunters to gain that knowledge without first-hand experience.

HUNTER AGE STRUCTURE 2021

<20	20-29	30-39	40-49	50-59	60-69	70+
4%	10%	16%	15%	24%	20%	10%

Connecticut designates specific days when experienced adult hunters are encouraged to take a youth hunting, helping them learn safe and effective hunting practices, develop observational skills, and gain confidence and the comfort level they need to discover a passion for hunting and the outdoors.

Specific Youth training days for the deer season and others are in the *Connecticut Hunting and Trapping Guide* or at https://portal.ct.gov/DEEP-

Mentoring is also important for new adult hunters, so do not limit your efforts to just youths. The same skills taught to youth hunters are needed to help adults new to hunting learn the ropes. Whether it be a coworker, friend, or neighbor — either youth or adult — take the time to introduce a new hunter to a lifetime of appreciation for our natural resources through hunting.

Appendix 1. Total reported deer killed by town, 2021.

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Andover	29	17	7	4	0	0	0	57
Ansonia	6	3	0	0	0	0	0	9
Ashford	42	73	31	9	4	1	0	160
Avon	16	6	0	1	2	3	1	29
Barkhamsted	9	27	6	3	0	2	0	47
Beacon Falls	8	18	0	1	0	2	0	29
Berlin	35	11	9	2	0	0	1	58
Bethany	40	13	1	4	0	0	0	58
Bethel	36	7	0	1	0	6	2	52
Bethlehem	13	11	0	2	0	0	0	26
Bloomfield	27	12	1	2	3	0	0	45
Bolton	14	13	2	4	3	1	0	37
Bozrah	15	17	12	5	2	0	0	51
Branford	19	3	0	0	0	2	0	24
Bridgeport	0	0	0	0	0	0	0	0
Bridgewater	15	21	1	2	1	0	0	40
Bristol	5	6	2	1	0	2	1	17
Brookfield	36	3	0	2	0	5	0	46
Brooklyn	16	26	13	4	2	4	0	65
Burlington	19	24	1	8	0	3	0	55
Canaan	37	29	8	5	1	0	0	80
Canterbury	31	40	22	1	0	2	0	96
Canton	14	14	7	1	1	8	0	45
Chaplin	28	32	15	7	2	0	0	84
Cheshire	66	15	0	1	20	2	6	110
Chester	9	14	2	2	0	0	0	27
Clinton	14	3	0	0	0	0	0	17
Colchester	37	42	11	7	3	0	0	100
Colebrook	5	8	2	2	0	0	0	17
Columbia	28	27	13	5	1	0	0	74
Cornwall	12	34	9	10	1	1	0	67
Coventry	50	61	10	1	1	7	1	131
Cromwell	5	2	1	0	2	1	0	11
Danbury	32	8	0	1	0	2	0	43
Darien	28	0	0	0	0	4	5	37
Deep River	10	5	3	2	0	0	0	20
Derby	6	3	0	0	0	0	0	9
Durham	28	26	3	5	1	0	0	63
East Granby	13	7	0	1	3	2	0	26
East Haddam	59	66	22	13	5	3	0	168
East Hampton	28	36	6	4	0	2	0	76
East Hartford	9	3	0	0	2	2	0	16
East Haven	13	0	0	0	0	1	0	14
East Lyme	37	19	2	0	0	7	0	65
East Windsor	21	29	6	4	1	5	0	66
Eastford	18	39	8	5	0	0	0	70
Easton	70	30	1	4	10	9	2	126
Ellington	20	8	7	0	0	2	0	37

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Enfield	36	20	0	1	0	5	0	62
Essex	3	4	0	0	0	0	0	7
Fairfield	59	7	0	3	0	0	0	69
Farmington	18	4	0	0	8	15	0	45
Franklin	13	25	6	2	0	0	1	47
Glastonbury	41	16	1	9	27	9	1	104
Goshen	25	12	6	0	0	0	0	43
Granby	18	15	6	0	0	9	0	48
Greenwich	43	2	0	1	0	0	0	46
Griswold	30	49	17	0	18	2	0	116
Groton	42	9	0	1	4	3	0	59
Guilford	43	16	5	5	10	2	2	83
Haddam	32	40	12	4	2	0	0	90
Hamden	31	11	2	3	11	0	0	58
Hampton	17	21	24	2	4	0	0	68
Hartford	0	0	1	0	0	0	0	1
Hartland	7	22	3	2	0	1	0	35
Harwinton	16	22	7	4	4	6	0	59
Hebron	27	28	14	2	0	0	0	71
Kent	47	45	5	2	5	5	0	109
Killingly	48	44	26	6	0	6	0	130
Killingworth	34	32	5	8	0	0	0	79
Lebanon	62	58	32	12	18	0	0	182
Ledyard	39	34	11	5	0	4	0	93
Lisbon	11	13	13	0	0	3	0	40
Litchfield	37	39	16	5	2	13	0	112
Lyme	24	36	5	4	1	0	0	70
Madison	22	6	0	0	0	0	0	28
Manchester	29	4	1	1	0	0	0	35
Mansfield	64	39	14	6	10	1	0	134
Marlborough	17	26	13	6	0	0	0	62
Meriden	15	10	2	1	0	0	0	28
Middlebury	15	4	3	2	0	8	0	32
Middlefield	24	17	1	2	11	0	0	55
Middletown	66	33	6	6	0	1	0	112
Milford	24	3	0	0	2	0	0	29
Monroe	41	12	0	2	0	0	0	55
Montville	40	28	13	6	5	0	0	92
Morris	15	16	3	1	0	2	0	37
Naugatuck	18	11	2	1	0	0	0	32
New Britain	1	0	0	0	0	0	0	1
New Canaan	40	0	1	0	0	5	7	53
New Fairfield	28	12	0	0	0	5	0	45
New Hartford	29	20	7	4	4	5	0	69
New Haven	4	0	0	0	0	0	0	4
New London	1	0	0	0	0	0	0	1
New Milford	56	50	5	6	0	2	0	119
Newington	7	0	0	0	2	0	0	9
Newtown	107	34	3	7	1	15	0	167

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Norfolk	10	24	5	5	0	0	0	44
North Branford	33	7	0	0	0	3	0	43
North Canaan	10	9	2	3	0	2	0	26
North Haven	28	4	0	0	0	2	0	34
North Stonington	38	59	14	13	0	0	0	124
Norwalk	23	0	0	0	0	0	0	23
Norwich	21	16	1	1	0	6	2	47
Old Lyme	22	8	1	3	0	0	0	34
Old Saybrook	9	4	0	2	0	5	0	20
Orange	32	2	0	0	2	7	0	43
Oxford	25	23	2	3	8	1	1	63
Plainfield	44	48	10	6	11	4	1	124
Plainville	7	1	0	0	0	1	0	9
Plymouth	10	21	9	1	0	0	0	41
Pomfret	37	48	14	9	0	0	0	108
Portland	13	24	2	7	3	14	1	64
Preston	39	27	11	5	9	2	0	93
Prospect	26	4	0	1	0	1	0	32
Putnam	20	20	4	0	0	1	0	45
Redding	66	22	0	0	0	0	1	89
Ridgefield	78	6	0	3	0	1	0	88
Rocky Hill	5	18	0	3	0	5	0	31
Roxbury	13	15	4	7	5	2	0	46
Salem	22	26	7	2	2	0	0	59
Salisbury	55	40	5	13	1	1	0	115
Scotland	16	32	4	5	0	1	0	58
Seymour	29	3	0	1	0	9	1	43
Sharon	36	60	11	7	5	1	0	120
Shelton	41	4	0	0	11	1	0	57
Sherman	32	14	1	1	0	2	0	50
Simsbury	20	3	1	1	2	2	0	29
Somers	27	15	1	2	1	0	0	46
South Windsor	16	16	1	6	3	3	1	46
Southbury	32	23	3	4	3	12	0	77
Southington	21	7	2	2	4	3	0	39
Sprague	10	13	6	2	0	0	0	31
Stafford	40	31	26	6	1	4	0	108
Stamford	52	0	0	0	0	0	0	52
Sterling	21	11	14	1	8	2	1	58
Stonington	68	34	6	5	12	4	0	129
Stratford	7	2	0	0	0	0	0	9
Suffield	28	32	6	13	1	8	0	88
Thomaston	13	3	2	1	4	2	0	25
Thompson	61	56	21	10	0	3	0	151
Tolland	45	21	9	4	4	6	1	90
Torrington	27	16	4	3	0	6	0	56
Trumbull	23	0	0	0	0	0	0	23
Union	18	19	11	0	0	0	0	48
Vernon	19	10	1	1	0	2	0	33

Town	Archery	Shotgun/Rifle	Landowner	Muzzleloader	Cropkill	Roadkill	Other	Total
Voluntown	27	34	10	3	3	1	0	78
Wallingford	63	39	3	9	6	21	0	141
Warren	14	19	5	0	9	1	0	48
Washington	28	32	4	5	22	5	0	96
Waterbury	6	1	0	0	0	0	0	7
Waterford	49	17	7	2	0	0	0	75
Watertown	26	19	5	3	0	2	0	55
West Hartford	1	0	0	0	0	2	1	4
West Haven	2	0	0	0	0	0	0	2
Westbrook	10	6	1	0	0	0	0	1
Weston	35	15	0	0	0	0	0	50
Westport	0	0	0	0	0	0	0	0
Wethersfield	7	5	0	0	1	0	0	13
Willington	30	24	14	4	0	3	0	75
Wilton	68	23	0	5	7	0	0	103
Winchester	19	14	3	0	0	4	0	40
Windham	32	14	8	6	2	1	1	64
Windsor	18	8	0	0	2	9	0	37
Windsor Locks	1	0	0	0	0	0	0	1
Wolcott	8	4	0	0	0	2	0	14
Woodbridge	33	5	1	2	0	15	0	56
Woodbury	20	17	4	5	1	4	0	51
Woodstock	49	62	19	10	0	0	0	140
Total	**4,528**	**3,119**	**840**	**484**	**373**	**417**	**42**	**9,803**

Appendix 2. Deer harvest on state hunting areas, including Deer Lottery Hunting Areas (DLHA), 2021

Fall Archery	Muzzleloader	Lottery Area #	No-Lottery	Code	● Hunting Permitted / ▲ Designated Deer Bowhunting Only Area (▲ areas are open during shotgun and muzzleloader) / ▲/● Some Sections open to Archery ONLY / AB (No-Lottery A and B) B (No-Lottery B only) / ○ Daily/Season Permit Required ✻ Special Conditions / ○ shaded lines = Harvest/mi² greater than 10	Square miles	Fall Archery	Muzzleloader	Lottery	No Lottery	Total Harvest	Harvest/mi²
▲	●	62		308	Aldo Leopold WMA	0.87	2	0	6	0	8	9.20
●	●		AB	201	Algonquin SF	1.04	7	4		8	19	18.27
●	●		AB	202	American Legion SF	1.62	1	0		0	1	0.62
●	●		AB	272	Assekonk Swamp WMA	1.07	2	0		3	5	4.67
●	●		AB	244	Babcock Pond WMA	2.36	1	0		3	4	1.69
▲				203	Barber Pond WMA	0.11	3	0		0	3	27.27
●	●		AB	273	Barn Island WMA	1.58	10	1		6	17	10.76
▲/●	●		AB	274	Bartlett Brook WMA	1.10	5	2		0	7	6.36
▲				275	Bear Hill WMA	0.57	1	0		0	1	1.75
▲				276	Beaver Brook SP	0.56	1	0		0	1	1.79
▲				309	Bennett's Pond SP	0.72	6	0		0	6	8.33
▲				277	Bigelow Hollow SP	0.80	0	0		0	0	0.00
▲				245	Bishops Swamp WMA	1.18	2	0		0	2	1.69
▲				337	Black Pond WMA	0.11	1	0		0	1	9.09
▲				204	Black Rock Lake (state and federally owned)	0.62	1	0		1	2	3.23
▲				205	Bloomfield Flood Control Area (Site 1)	0.51	7	0		2	9	17.65
		52		329	Bristol Water Company	6.75	0	0	13	0	13	1.93
▲/●	●		AB	207	Camp Columbia SF	0.94	4	0		4	8	8.51
●	●		AB	347	Candlewood Hill WMA	0.31	0	0		3	3	9.68
▲				208	Cedar Swamp WMA	0.43	1	0		0	1	2.33
		56		310	Centennial Watershed SF	6.77	38	0	41	0	79	11.67
●	●		AB	209	Centennial Watershed SF (Canaan Block)	0.23	0	0		3	3	13.04
▲				311	Centennial Watershed SF (formerly Bpt. Hydr.) -Shelton	0.16	0	0		0	0	0.00
▲				310	Centennial Watershed SF -Monroe Parcel (Hattertown)	0.05	0	0		0	0	0.00
▲/●	●		AB	246	Cockaponset SF	26.85	45	8		49	102	3.80
▲				313	Collis P. Huntington SP	1.61	5	0		0	5	3.11
▲				247	Cromwell Meadows WMA	0.79	2	0		0	2	2.53
▲				210	CT Light & Power (borders Newgate WMA)	0.32	1	0		0	1	3.13
▲				248	Durham Meadows WMA	0.80	2	0		0	2	2.50
▲				315	East Swamp WMA	0.10	4	0		1	5	50.00
▲				211	East Twin Lakes Water Access Area	0.15	2	0		0	2	13.33
●	●		AB	249	Eightmile River WMA	0.48	0	0		0	0	0.00
●	●		AB	250	Ellithorpe Flood Control Area	0.64	3	1		0	4	6.25
▲				332	Enders SF (Worthen Parcel ONLY)	0.55	0	0		0	0	0.00
●	●		AB	278	Franklin Swamp WMA	1.07	0	0		0	0	0.00
▲				316	George C. Waldo SP	0.23	1	0		0	1	4.35

Fall Archery	Muzzleloader	Lottery Area #	No-Lottery	Code	● Hunting Permitted ▲ Designated Deer Bowhunting Only Area (▲ areas are open during shotgun and muzzleloader) ▲/● Some Sections open to Archery ONLY AB (No-Lottery A and B) B (No-Lottery B only) ❍ Daily/Season Permit Required ✱ Special Conditions ❍ shaded lines = Harvest/mi² greater than 10	Square miles	Fall Archery	Muzzleloader	Lottery	No Lottery	Total Harvest	Harvest/mi²
●	●		AB	213	Goshen WMA	1.51	0	0		0	0	0.00
▲				318	Great Swamp Flood Control Area	0.53	6	0		0	6	11.32
●			AB	214	Hancock Brook Lake (federally owned)	1.10	2	0		0	2	1.82
❍				280	Harkness Memorial SP ▲ (Verkade Property)	0.44	6	0		0	6	13.64
▲				251	Higganum Meadows WMA (off Clarkhurst Road)	0.40	5	0		0	5	12.50
▲				252	Higganum Reservoir	0.23	0	1		0	1	4.35
▲				215	Housatonic River WMA	0.87	9	0		0	9	10.34
●	●		AB	216	Housatonic SF	17.63	3	4		20	27	1.53
●	●		AB	302	James V. Spignesi WMA	0.81	2	0		4	6	7.41
▲				217	John Minetto SP	1.12	0	0		0	0	0.00
▲				281	Killingly Pond SP	0.27	1	0		0	1	3.70
●	●		AB	253	Kollar WMA	1.40	8	0		1	9	6.43
●	●		AB	254	Larson Lot WMA	0.38	0	0		2	2	5.26
▲				282	Lebanon Coop Mgmt. Area	0.33	4	0		0	4	12.12
▲				283	Little River Fish and Wildlife Area	0.08	2	0		0	2	25.00
▲				218	Mad River Dam Flood Control Area	0.70	1	0		0	1	1.43
▲				255	Mansfield Hollow Lake (excluding SP)	3.14	19	0		0	19	6.05
▲				256	Mansfield State-Leased Field Trial Area	0.37	0	0		0	0	0.00
●	●		AB	219	Mattatuck SF	7.02	9	1		11	21	2.99
●	●		AB	220	MDC – Colebrook Reservoir/Hogback Dam	6.50	2	0		3	5	0.77
▲				221	MDC – Greenwoods Pond	0.31	3	0		0	3	9.68
		64		343	MDC Barkhamsted Res. -Barkhamsted Block	6.69	0	0	11	0	11	1.64
		67		346	MDC Barkhamsted Res-Hartland Block	5.78	0	0	8	0	8	1.38
		58		330	MDC Nepaug Resevoir - Valentine/Pine Hill Block	2.32	0	0	18	0	18	7.76
●				349	MDC Lake McDonough	1.22	1	0		0	1	0.82
▲		66		345	MDC Sweetheart Mnt. Block	0.78	3	0		1	4	5.13
●	●		AB	339	Meadow Brook WMA	0.42	0	0		1	1	2.38
▲				338	Menunketesuck Pond WMA (formerly Chapmans Pond)	0.26	0	0		0	0	0.00
●	●		AB	257	Meshomasic SF	14.22	19	9		29	57	4.01
▲				258	Messerschmidt Pond WMA	0.72	3	0		0	3	4.17
●	●		AB	259	Millers Pond	0.41	1	0		2	3	7.32
▲				341	Mohawk SF - Clark Pond Tract	0.19	0	0		0	0	0.00
●	●	63		342	Mohawk SF - Ziegler/Johnson Tract	0.51	0	0		0	0	0.00
●	●		AB	285	Mohegan SF	1.50	0	0		4	4	2.67
▲				260	Mono Pond	0.45	2	0		0	2	4.44
▲				222	Mount Riga SP	0.47	1	0		0	1	2.13
●	●		AB	223	Nassahegon SF	1.30	2	0		1	3	2.31
▲/●	●		AB	286	Natchaug SF	7.93	31	10		44	85	10.72
●	●		AB	261	Nathan Hale SF Mgmt. Area	2.27	6	0		8	14	6.17

Fall Archery	Muzzleloader	Lottery Area #	No-Lottery	Code	● Hunting Permitted ▲ Designated Deer Bowhunting Only Area (▲ areas are open during shotgun and muzzleloader) ▲/● Some Sections open to Archery ONLY AB (No-Lottery A and B) B (No-Lottery B only) ○ Daily/Season Permit Required ✱ Special Conditions ○ shaded lines = Harvest/mi² greater than 10	Square miles	Fall Archery	Muzzleloader	Lottery	No Lottery	Total Harvest	Harvest/mi²
●	●		AB	319	Naugatuck SF	21.15	15	2		22	39	1.84
▲				320	Naugatuck SF (Great Hill Block)	0.37	6	0		0	6	16.22
▲/●	●	28		321	Naugatuck SF* (Quillinan Reservoir Block)	0.90	8	0	5	0	13	14.44
▲/●	●		AB	287	Nehantic SF	7.91	7	0		15	22	2.78
●	●		AB	224	Nepaug SF	2.10	3	0		2	5	2.38
▲				225	Newgate WMA	0.70	4	0		0	4	5.71
●	●		AB	288	Nipmuck SF	14.40	18	2		15	35	2.43
▲				227	Northfield Brook Lake (federally owned)	0.31	0	0		0	0	0.00
▲				289	Nott Island	0.13	2	0		0	2	15.38
●	●		AB	263	NU-Maromas Coop WMA	2.48	10	1		4	15	6.05
●	●		AB	228	NU-Skiff Mtn. Coop WMA	1.13	0	1		2	3	2.65
▲/●	●		AB	264	Nye Holman SF	1.20	5	1		2	8	6.67
▲/●	●		AB	290	Pachaug SF	40.84	45	4		48	97	2.38
●	●		AB	229	Paugnut SF	2.70	5	1		5	11	4.07
▲/●	●		AB	322	Paugussett SF	3.04	4	1		4	9	2.96
●	●		AB	291	Pease Brook WMA	0.33	0	0		1	1	3.03
●	●		AB	230	Peoples SF	4.60	0	0		1	1	0.22
▲				292	Pomeroy SP	0.32	6	0		0	6	18.75
●	●		AB	324	Pootatuck SF	1.72	1	0		4	5	2.91
●	●		AB	293	Quaddick SF	0.90	6	0		2	8	8.89
●	●		AB	294	Quinebaug River WMA	0.88	6	0		5	11	12.50
▲				295	Quinebaug River WMA (Aspinook Pond)	0.03	1	0		0	1	33.33
▲				326	Quinnipiac River SP	0.53	15	0		0	15	28.30
●	●		AB	296	Red Cedar Lake (Camp Mooween)	0.93	0	0		0	0	0.00
●	●		AB	231	Robbins Swamp WMA	2.45	4	2		5	11	4.49
●	●		AB	232	Roraback WMA	3.10	4	0		3	7	2.26
●	●		AB	297	Rose Hill WMA	1.08	6	1		6	13	12.04
▲				298	Ross Marsh WMA	0.45	4	0		1	5	11.11
▲				299	Ross Pond SP	0.58	3	0		0	3	5.17
▲				267	Salmon River Cove and Haddam Neck	0.19	1	0		0	1	5.26
●	●		AB	300	Salmon River SF (including Holbrook Pond)	10.90	24	2		18	44	4.04
▲				268	Scantic River SP	0.92	3	0		0	3	3.26
●	●			301	Selden Neck SP (Selden Island)	0.88	5	0		0	5	5.68
○				233	Sessions Woods WMA	1.20	1	0		0	1	0.83
●	●		AB	269	Shenipsit SF	11.85	11	2		16	29	2.45
●	●		AB	333	Silvio O. Conte NWR - Salmon River Div. (federal land)	0.41	1	0		2	3	7.32
▲				234	Simsbury WMA	0.57	3	0		0	3	5.26
▲/●				350	Stewart B. McKinney NWR	0.72	5	0		0	5	6.94
▲				235	Sucker Brook Flood Control Area	0.24	3	0		0	3	12.50

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▲				236	Suffield WMA	0.30	1	0		0	1	3.33
●	●		AB	303	Sugarbrook Field Trial Area	0.31	2	0		1	3	9.68
▲				237	Sunnybrook SP (west of Newfield Rd.)	0.69	2	0		0	2	2.90
●	●		AB	304	Talbot WMA	0.79	2	1		3	6	7.59
●	●	60		334	Tankerhoosen WMA	0.78	5	0	3	0	8	10.26
▲				238	Thomaston Dam (federally owned)	1.33	1	0		0	1	0.75
●	●		AB	239	Topsmead SF (north and west of Rte. 118)	0.28	0	0		2	2	7.14
❍	❍	26		327	Trout Brook Valley SP	0.47	1	0	0	0	1	2.13
●	●		AB	240	Tunxis SF	15.88	5	2		11	18	1.13
●	●		AB	270	Wangunk Meadows (off Rte. 17a)	1.00	0	0		3	3	3.00
●	●		AB	305	West Thompson Dam (federal land)	1.71	1	0		5	6	3.51
▲				241	Whiting River Flood Control Area	0.29	0	0		1	1	3.45
▲				242	Wood Creek Flood Control Area	0.17	0	0		0	0	0.00
▲				328	Wooster Mountain SP	0.69	1	0		0	1	1.45
●	●		AB	271	Wopowog WMA	0.73	1	0		4	5	6.85
●	●		AB	243	Wyantenock SF	6.38	6	1		15	22	3.45
		51		306	Yale Forest (owned by Yale University)	12.03	0	0	24	0	24	2.00
●	●		AB	307	Zemko Pond WMA	0.71	2	0		1	3	4.23

Caution should be used when evaluating harvest on individual properties as errors can occur in the reporting process.

Appendix 3. **Sex ratios (male:female) of deer harvested during Connecticut's regulated hunting seasons, 2019-2021.**

Season	2019		2020		2021		3-year Average (2019-2021)		Males per Female		
	Males	Females	Males	Females	Males	Females	Males	Females	2019	2020	2021
Archery											
State Land	313	277	399	276	378	199	363	251	1.13	1.45	1.90
Private Land	2,844	2,038	2,835	2,094	2,377	1,402	2,685	1,845	1.40	1.35	1.70
Subtotal	**3,157**	**2,315**	**3,234**	**2,370**	**2,755**	**1,601**	**3,049**	**2,095**	**1.36**	**1.36**	**1.72**
Muzzleloader											
State Land	48	43	65	59	37	28	50	43	1.12	1.10	1.32
Private Land	233	278	272	325	213	206	239	270	0.84	0.84	1.03
Subtotal	**281**	**321**	**337**	**384**	**250**	**234**	**289**	**313**	**0.88**	**0.88**	**1.07**
Shotgun/Rifle											
State Land	446	206	427	182	429	158	434	182	2.17	2.35	2.72
Private Land	1,822	1,073	1,891	975	1,706	826	1,806	958	1.70	1.94	2.07
Subtotal	**2,268**	**1,279**	**2,318**	**1,157**	**2,135**	**984**	**2,240**	**1,140**	**1.77**	**2.00**	**2.17**
Landowner	688	330	608	319	607	233	634	294	2.08	1.91	2.61
Total	**6,394**	**4,245**	**6,497**	**4,230**	**5,747**	**3,052**	**6,213**	**3,842**	**1.51**	**1.54**	**1.88**

Appendix 4. Non-hunting deer mortality reported in Connecticut, 2008-2021.

Cause of Death	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Road	2,190	1,902	1,456	1,683	1,177	1,211	1,081	749	619	687	608	480	451[1]	417
Dog	3	1	1	0	2	0	5	0	0	2	2	1	1	0
Unknown	72	92	49	82	58	89	59	62	49	43	31	14	46[1]	39
Illegal	9	3	10	4	6	4	2	2	0	2	1	0	4[1]	1
Crop Damage	883	780	715	804	864	831	812	464	462	560	569	520	239	373
Total	**3,157**	**2,778**	**2,231**	**2,573**	**2,108**	**2,135**	**1,959**	**1,277**	**1,130**	**1,294**	**1,211**	**1,015**	**740[1]**	**830**
Non-hunting: Harvest	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	1:9.3	1:10.7	1:14.7	1:10.8
% Mortality*	20.0	19.1	11.1	11.6	13.5	14.5	14.6	12.2	9.5	9.7	9.7	8.5	6.3	8.4
% of Harvest	24.9	23.6	12.4	14.0	14.7	17.0	16.1	14.0	10.6	10.7	10.7	9.3	6.8	9.3

* Crop damage harvest is included under non-hunting mortality.
[1] Revised numbers from 2020 Deer Summary report due to volume of reports received late

Appendix 5. Frequency of deer roadkills in each of Connecticut's Deer Management Zones, a 5-year comparison, 2017-2021.

Zone	2017	2018	2019	2020[1]	2021	Five-year Total	Zonal %	Habitat (sq. miles)	Roadkills/Sq. Mile 2019	Roadkills/Sq. Mile 2020	Roadkills/Sq. Mile 2021
1	41	47	31	21	23	163	6.2%	344.1	0.09	0.06	0.07
2	57	51	28	50	45	231	8.8%	409.85	0.07	0.12	0.11
3	107	81	85	75	86	434	16.4%	272.1	0.31	0.28	0.32
4A	17	26	26	15	15	99	3.8%	213.1	0.12	0.07	0.07
4B	21	29	26	28	11	115	4.4%	120.0	0.22	0.23	0.09
5	66	41	50	32	25	214	8.1%	444.9	0.11	0.07	0.06
6	50	53	29	29	29	190	7.2%	259.1	0.11	0.11	0.11
7	100	79	71	77	71	398	15.1%	370.9	0.19	0.21	0.19
8	11	6	6	5	1	29	1.1%	167.6	0.04	0.03	0.01
9	3	10	14	3	2	32	1.2%	277.8	0.05	0.01	0.01
10	50	51	32	36	18	187	7.1%	243.6	0.13	0.15	0.07
11	109	85	55	53	55	357	13.5%	290.76	0.19	0.18	0.19
12	55	49	23	27	36	190	7.2%	356.4	0.06	0.08	0.10
Total	**687**	**608**	**476**	**451**	**417**	**2,639**	**100.0**	**3,770.2**	**0.13***	**0.12***	**0.11***

* These numbers are averages, not totals.
[1] Revised numbers from 2020 Deer Summary report due to volume of reports received late

Appendix 6. Deer removed using crop damage permits in Connecticut's Deer Management Zones, 2009-2021.

Zone	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1	55	45	37	67	44	39	32	37	38	46	30	25	24
2	12	19	17	25	15	16	15	20	18	14	10	4	9
3	101	70	99	70	97	99	30	58	85	71	80	20	62
4A	6	4	10	15	16	8	10	8	3	12	19	8	6
4B	33	39	28	41	56	55	24	13	23	41	35	10	15
5	95	57	93	87	88	77	55	37	45	66	46	8	37
6	58	78	56	74	62	89	49	41	49	47	38	16	32
7	93	88	123	127	118	110	72	60	77	74	86	58	49
8	33	32	28	36	40	41	11	11	23	28	15	6	14
9	79	55	56	56	77	65	35	40	18	31	39	26	30
10	76	75	104	90	83	90	53	53	82	55	47	20	30
11	106	118	93	113	91	79	45	57	55	53	35	19	29
12	33	35	60	63	44	43	30	27	44	31	40	19	36
Total	780	715	804	864	831	812	464	462	560	569	520	239	372

Photo courtesy of Paul Gionfriddo showing the impressive buck he harvested in 2021.