

2017 Antlerless Harvest and Youth Season Recommendation

to the
Vermont Fish and Wildlife Board



Vermont Fish and Wildlife Department
Agency of Natural Resources
1 National Life Drive Davis 2
Montpelier, VT 05620-3905
802-828-1000

Summary of Key Points

- Following a mild winter in 2017, the deer population is expected to increase about 7%, to a statewide total of around 157,000 deer.
- Deer populations in 13 WMUs are projected to be near or above their respective upper regional population objectives in 2017. The recommended permit allocation is intended to stabilize or reduce deer populations in these WMUs.
- A large group of fawns born in 2016 will be recruited to yearlings in 2017. As a result, increased harvests will be necessary to limit future growth of the population in many areas.
- Increasing populations in WMUs that are within their regional population objectives will allow for increased antlerless harvest opportunities.
- The recommended permit allocation is expected to result in the harvest of 3,678 antlerless deer during the muzzleloader season. This would result in an estimated total harvest from all seasons of approximately 7,434 antlerless deer.

Executive Summary

The Vermont Fish and Wildlife Department estimates there will be approximately 157,000 white-tailed deer on the Vermont landscape prior to the start of the 2017 deer hunting seasons. This represents an increase of 7 percent from the 2016 pre-hunt estimate, after incorporating the harvest data. Deer populations in 13 Wildlife Management Units (WMU) are expected to be near or above the upper population objectives established in the *2010-2020 Big Game Management Plan*, and increased populations will allow for the harvest of some antlerless deer, beyond those taken during youth and archery seasons, in nearly all remaining WMUs. The 2017 pre-hunt population estimates are calculated from deer population trends, analysis of herd demographic data, hunter effort data, 2017 winter severity information, and 2016 estimated deer populations at the WMU level.

Biological information, specifically, reproductive data and fawn body weights, collected annually by the Department, indicate that Vermont's deer herd is healthy and productive. Consecutive mild winters in 2016 and 2017 have allowed for deer population growth throughout the state. The winter of 2016 had the lowest winter severity index on record (since 1970), and the winter of 2017 was also relatively easy for deer across most of Vermont.

Deer are not evenly distributed across the landscape; therefore, harvest management strategies that reflect regional deer population estimates are essential to the continued health and proper management of Vermont's deer herd. To maintain a healthy and productive deer population, deer densities must be kept within established regional objectives through the regulated harvest of antlerless deer. To achieve the established density objectives, the Department recommends the harvest of 6,175 adult female deer during the 2017 hunting seasons. After accounting for expected archery and youth season harvests, the Department recommends that 3,126 adult does (3,678 antlerless deer) be harvested during the muzzleloader season through the issuance of 24,900 WMU-specific antlerless permits distributed among 18 of Vermont's 21 WMUs. The recommendation of 24,900 permits is 5,950 (31%) more than were allotted in 2016 (18,950). The majority of these permits (19,250; 77%) are recommended for WMUs in the Lake Plains, Western Foothills, and Connecticut river valley that are above their respective upper population objectives. Permit recommendations in these regions are intended to reduce deer densities.

The Department recommends that antlerless harvest be authorized during the archery and youth seasons in all WMUs to provide additional harvest opportunity and so hunters are available to address localized areas of high deer numbers. Additionally, the Department recommends that the youth season bag limit continue as one deer of either sex, regardless of antler characteristics, in all WMUs. Youth season is important for the recruitment of young hunters and the harvest provides critically important biological data on the entire deer population, including a representative sample of all yearling bucks.

Three public meetings were held in Brattleboro, Island Pond, and Middlebury from March 21-25, 2017 to gather hunter's comments on the deer herd and hunting regulations. A summary of comments is provided in Appendix A.

2017 Antlerless Harvest Recommendation

Pursuant to 10 V.S.A. §§4081, 4082 and 4084, and Appendix Chapter 1 §2c, hereafter is the Department's 2017 antlerless deer and youth season recommendation. Based on population estimates and public input, a harvest of 3,678 antlerless deer is recommended through an antlerless season (by permit) in 18 of 21 WMUs during the muzzleloader season. Adult females are typically 85% of the muzzleloader antlerless deer harvest, so this number of antlerless deer would yield approximately 3,126 adult does.

Population Status

The 2016 deer hunting seasons saw a 20 percent increase in the buck harvest (see *2016 Vermont White-tailed Deer Harvest Report* for more information). Increases occurred in all WMUs, but were most pronounced in the northeast and mountain units. These areas saw the greatest impact from the severe winters of 2014 and 2015 and have had limited antlerless harvest in recent years.

Biological information, specifically, reproductive data and fawn body weights, collected annually by the Department, indicate that Vermont's deer herd is healthy and productive (Figures 1 and 2). Body weights of all adult sex and age classes increased in 2016, presumably due in part to the exceptionally mild and open winter of 2016, but also demonstrating that deer and habitats are healthy. Reproductive rates also remain high, with most adult does producing twins, and anecdotal evidence indicating summer fawn survival was good in 2016. Overall, deer appeared to be in excellent condition entering 2017.

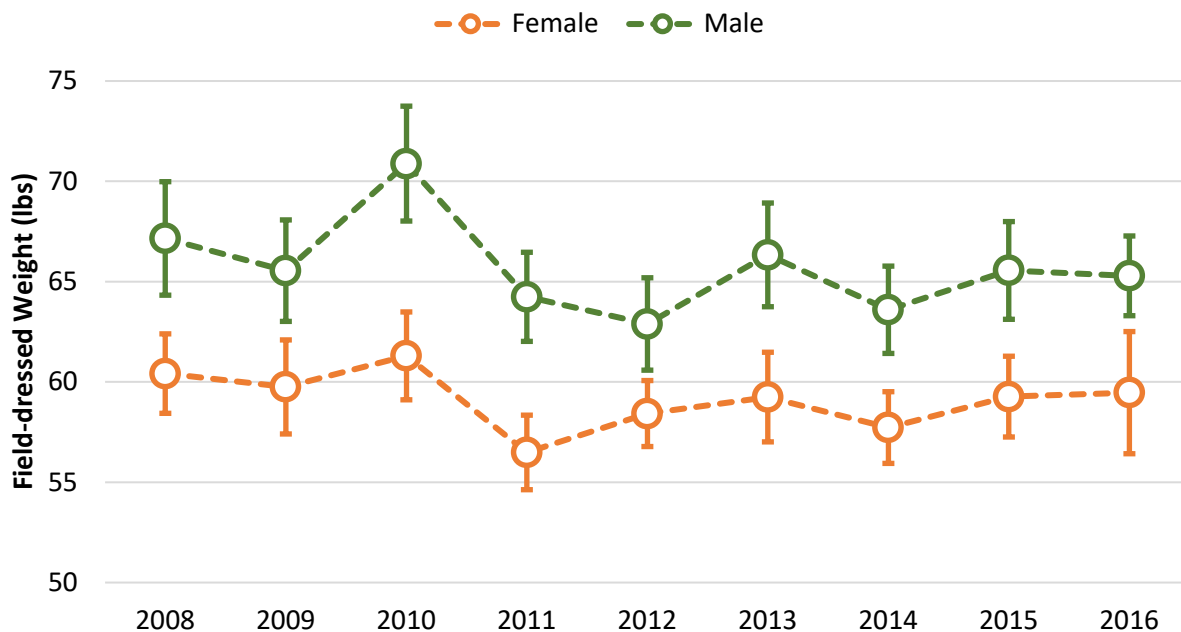


Figure 2. Male and female fawn field-dressed weight, 2008-2016. Data are from deer examined at biological check stations during Youth Season. Error bars show 95% confidence intervals.

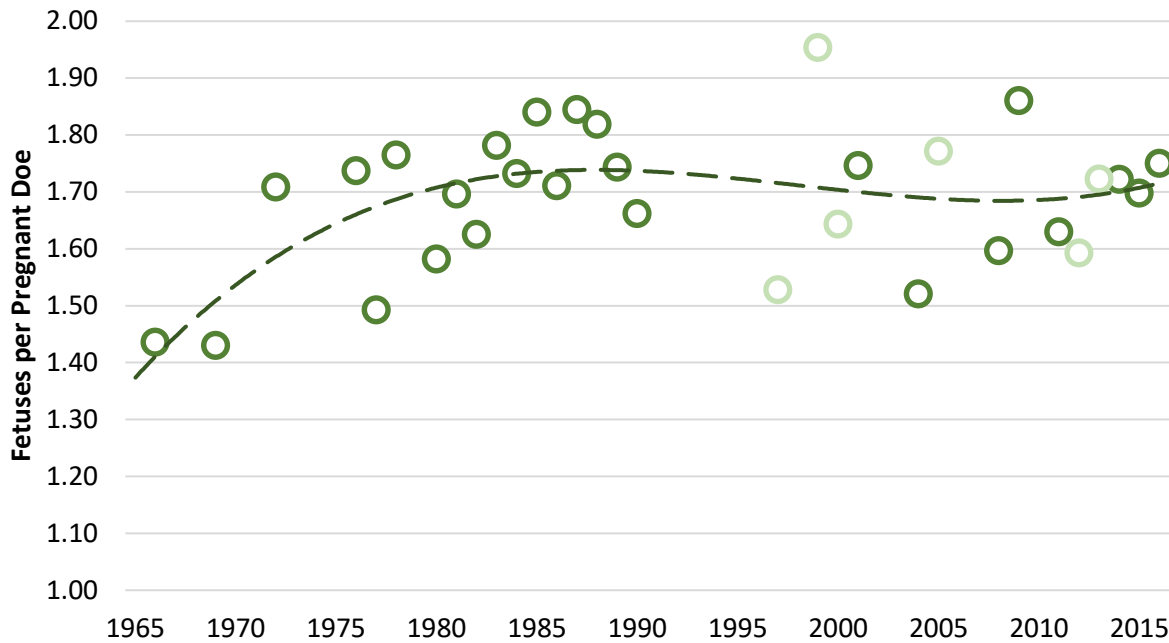


Figure 2. Fecundity (number of fetuses per pregnant doe) of adult does (1+ year old) in Vermont, 1965-2016. Data are from fetus counts obtained from incidentally-killed deer examined by Department staff. Lighter circles are suspect due to lower sample size and poor data quality.

Winter Severity 2017

The Department has long recognized the influence that winter weather can have on Vermont’s deer herd, and has been collecting winter severity data since 1970. Between December 1st and April 15th, volunteers record one winter severity index (WSI) point for each day with at least 18 inches of snow on the ground, and one point for each day the temperature reaches 0°F or below. These data have proven useful to describe deer population dynamics; however, how well deer survive winter depends largely on three factors: 1) body condition of deer during late-autumn as winter begins, 2) availability of quality deer wintering habitats, and 3) the timing of snow in the fall and snowmelt in spring. Snow cover that remains late into spring can cause significant negative impacts by delaying spring green up and, consequently, reducing fawn survival.

The winter of 2017 was mild with a state-wide average WSI of only 27 points (Figure 3). This was considerably lower than the 30-year average of 45. Outside of the Northeast Kingdom, snow depths only exceeded 18 inches for very brief periods (Figure 4). Lack of any substantial snow cover across much of the state for much of the winter allowed deer to utilize habitats outside of traditional wintering areas and access the best available foods. As a result, overwinter mortality was minimal.

Deer appeared to be in good condition entering the winter of 2017, despite only fair or poor mast production in 2016. Deer wintering areas throughout the state saw limited use in 2016, so browse availability should have been good in 2017. Limited utilization in many areas in 2017 means that wintering areas should be in good shape for next winter. We must now ensure that there are not more deer on the landscape than these habitats can support.

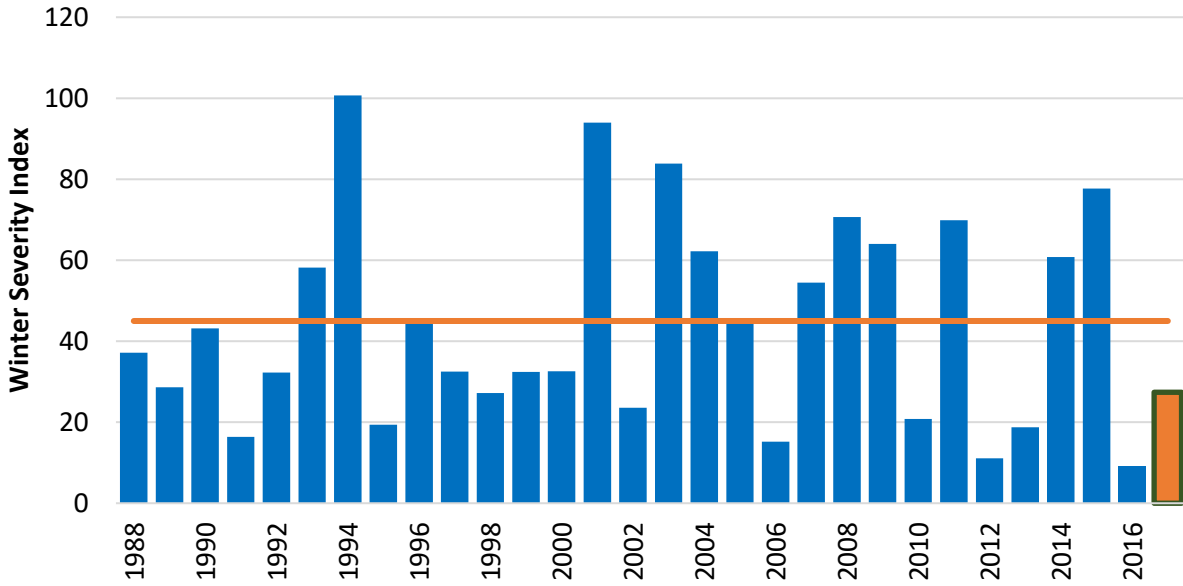


Figure 3. Statewide winter severity index (WSI), 1988-2017. The horizontal line shows the 30-year average WSI of 45.

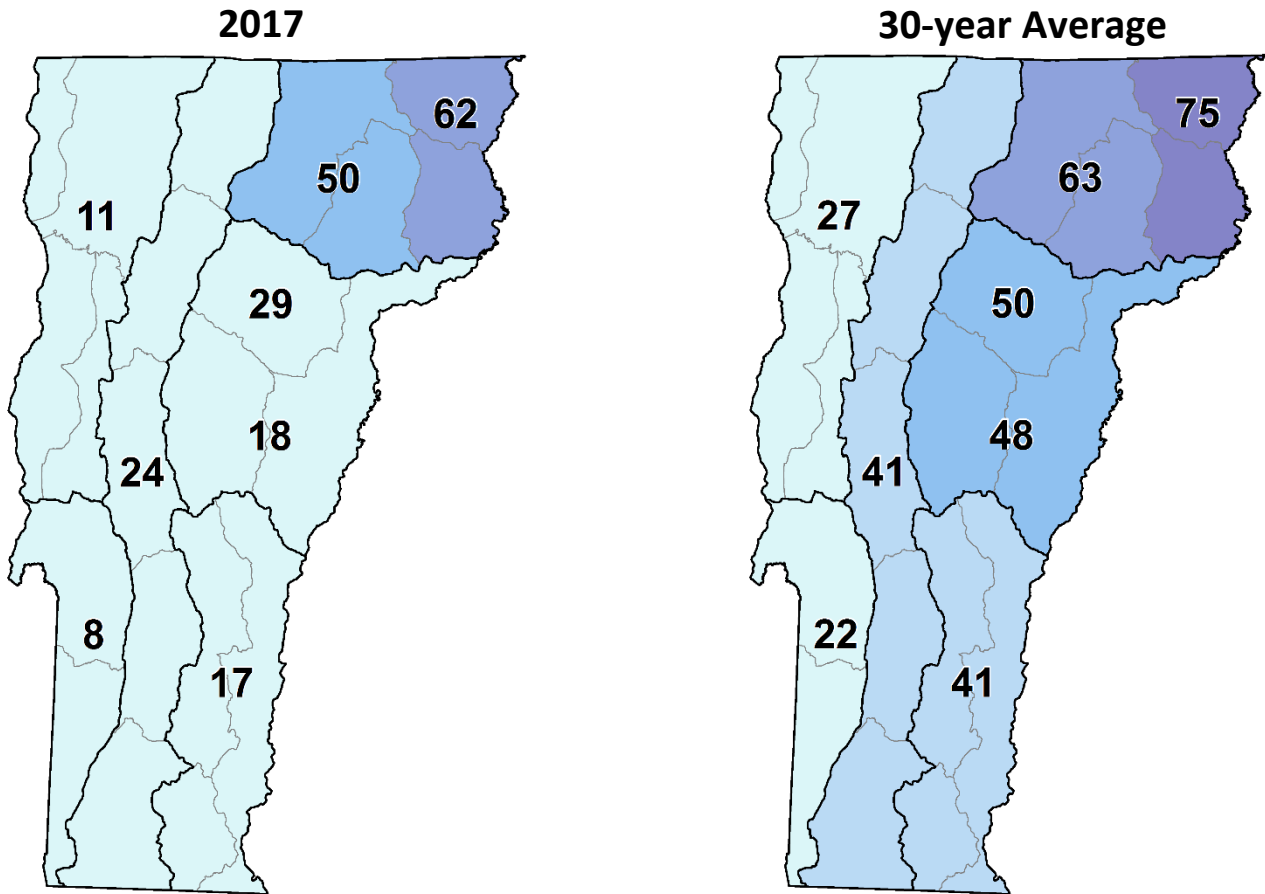


Figure 4. Regional winter severity index in 2017 and the 30-year average.

The mild winter of 2017 allowed for high overwinter survival, and, as a result, population growth is expected throughout the state (Figures 5 and 6). While continued growth is desirable in some areas, it means deer densities will exceed the upper population objectives in several WMUs. To keep habitats healthy and thereby keep deer healthy and productive, deer densities must be kept within established regional objectives (Figure 7). Maintaining a healthy deer herd is the best way to mitigate the potential effects of winter weather. Antlerless harvest in areas within population objectives remains an important tool for adjusting populations upward without setting the stage for dramatic increases in deer numbers.

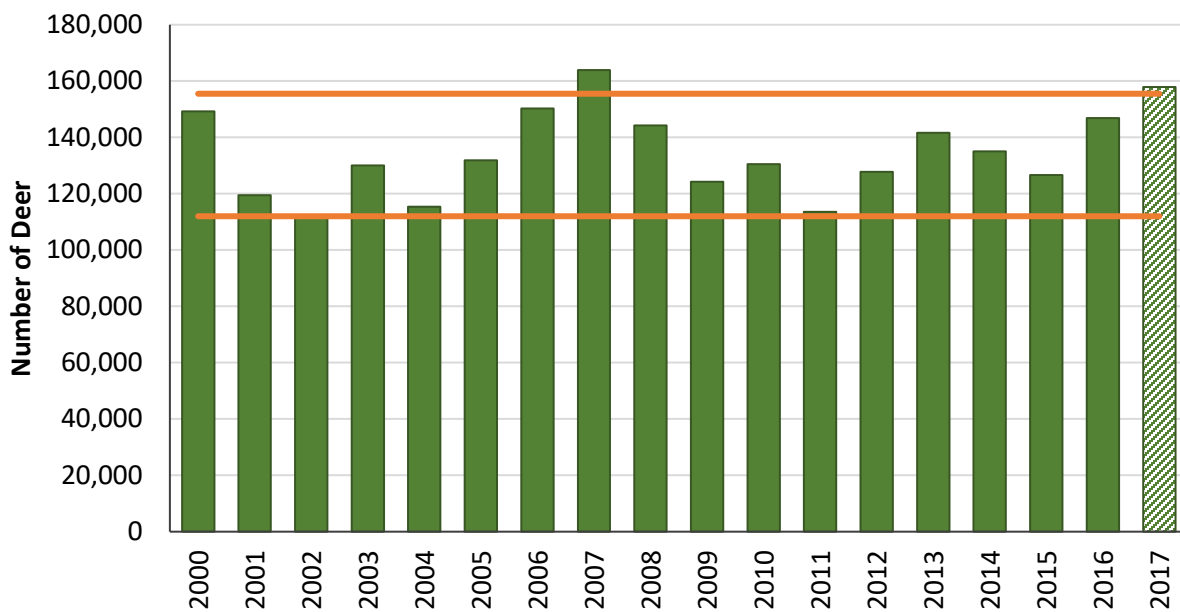
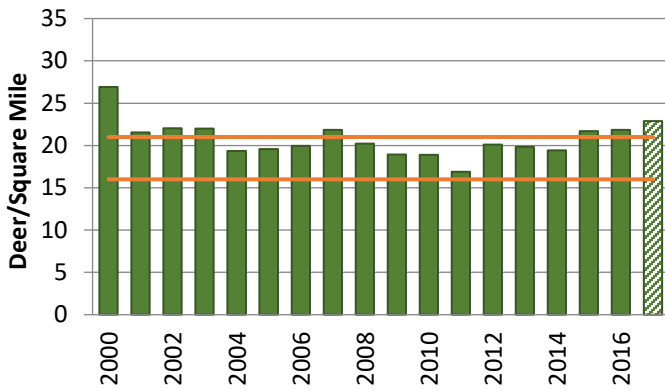
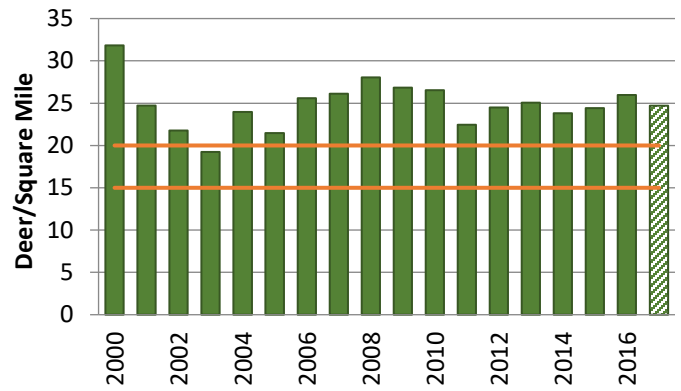


Figure 5. Statewide pre-hunt deer population estimates, 2000-2017. Population estimates are based on VT-DOEPOP, Sex-Age-Kill, MARK-removal, and roadkill-based modeling. Horizontal orange lines represent the upper and lower population objectives established in the *2010-2020 Big Game Management Plan*.

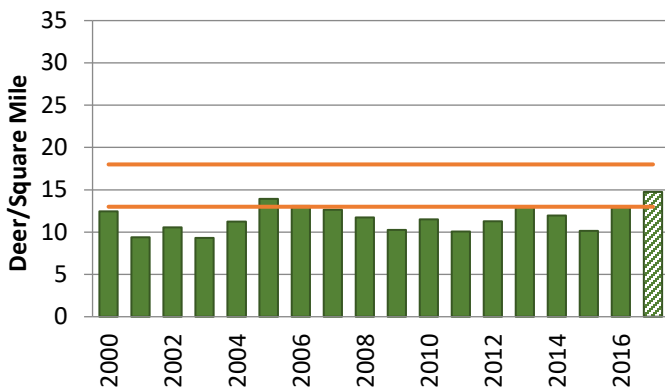
Lake Plains



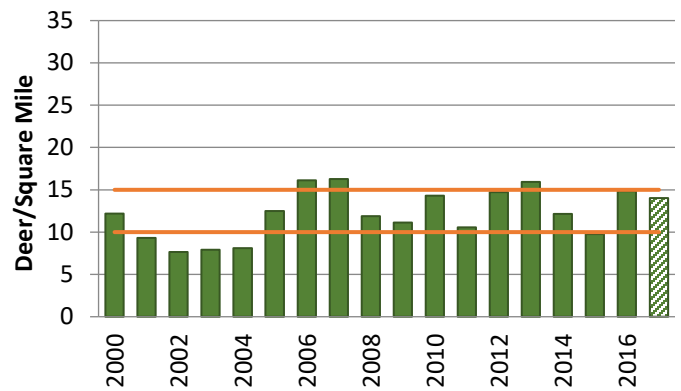
Western Foothills



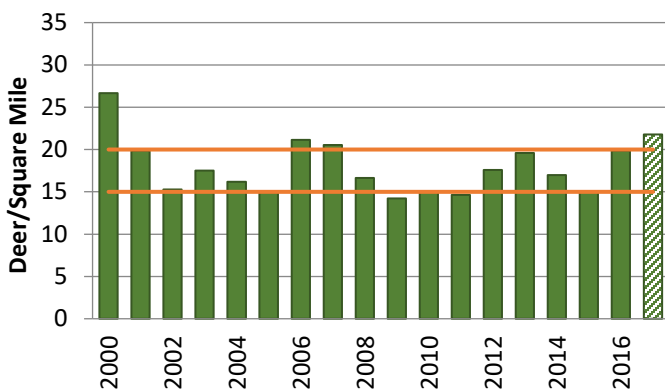
Mountains



Northeast



East Central



Eastern Foothills

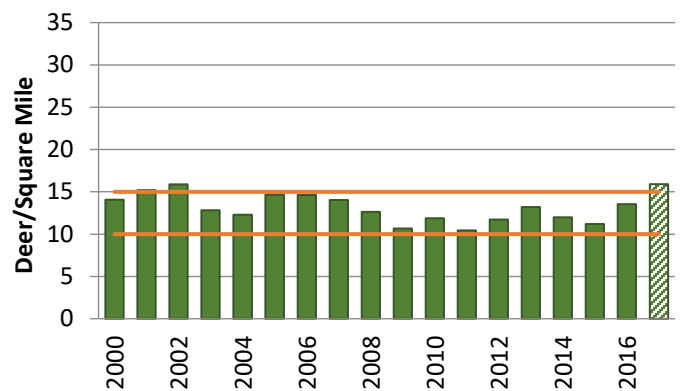


Figure 6. Regional pre-hunt deer density estimates, 2000-2017. Population estimates are based on VT-DOEPOP, Sex-Age-Kill, and MARK-removal modeling. Horizontal orange lines represent the upper and lower density objectives established in the 2010-2020 Big Game Management Plan.

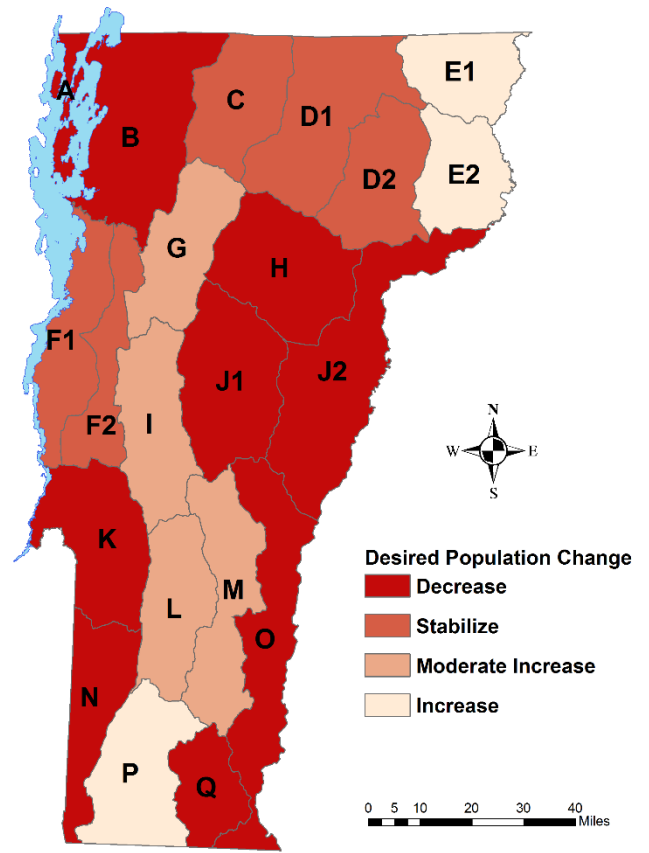
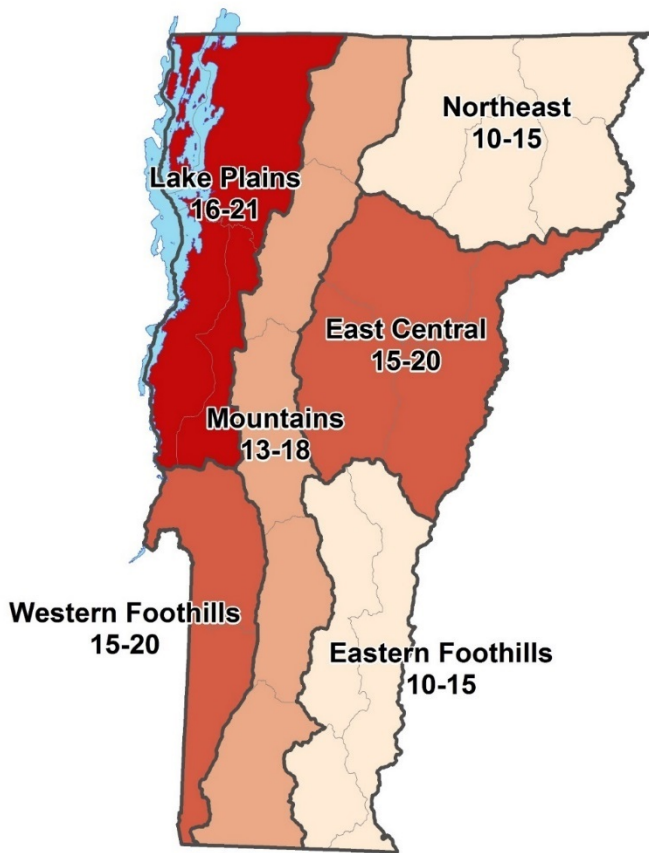


Figure 7. Deer management regions and respective deer density objectives. Deer densities are deer per square mile of habitat.

Figure 8. Desired change in the deer population, by Wildlife Management Unit, to reach regional density objectives.

Archery Season

The Department believes it is appropriate to have all WMUs open to the taking of antlerless deer during the 2017 archery season. Given the current system for harvesting antlerless deer in Vermont, it seems wise to keep archers ever-present. Antlerless harvest, in archery season, is a key component in deer population management in Vermont. Archery hunters tend to distribute their hunting effort and, as a result, harvest in areas with higher deer numbers. Therefore, archery harvest has a low impact in areas with fewer deer. Importantly, archery harvest allows hunters to better regulate local deer herds in areas with high deer densities.

Youth Season

The Department is strongly committed to recruiting young hunters into Vermont's deer hunting heritage. Based on this commitment and the importance of harvesting an adequate number of female deer each year, it is our recommendation that the youth season bag limit be one deer of either sex in all WMUs. This will continue to allow youth hunters the opportunity to help properly manage Vermont's deer herd. The Department also recommends that hunters during youth season be able to take any buck, regardless of antler characteristics. Concern has been expressed over the fact that young hunters can harvest spike-antlered bucks during this season and that it will defeat the intent of the antler point regulation. The youth season accounts for less than 10 percent of the total buck harvest (6% in 2016),

and it is critical that spike-antlered bucks be taken during this season so the Department can track their prevalence in the population (for population modeling) and obtain important biological information (e.g., weight, antler measurements) from this portion of the yearling buck population. This is a primary reason Department biologists examine deer during youth season each year.

Muzzleloader Season

Antlerless permits are recommended for 18 WMUs during the 2017 muzzleloader season. The Department recommends that a total of 24,900 antlerless permits be issued (31% more than the 18,950 approved for distribution in 2016). An increase in antlerless permits is recommended for 13 WMUs (Figure 9). These changes reflect the effects of recent antlerless harvests and the mild winters of 2016 and 2017. They are intended to stabilize or reduce populations in some WMUs and allow for moderate growth in others (Figure 8). This permit allocation is estimated to harvest an additional 3,678 antlerless deer above those harvested during archery and youth seasons. Harvesting this number of antlerless deer during muzzleloader season should yield 3,126 adult female deer (85%).

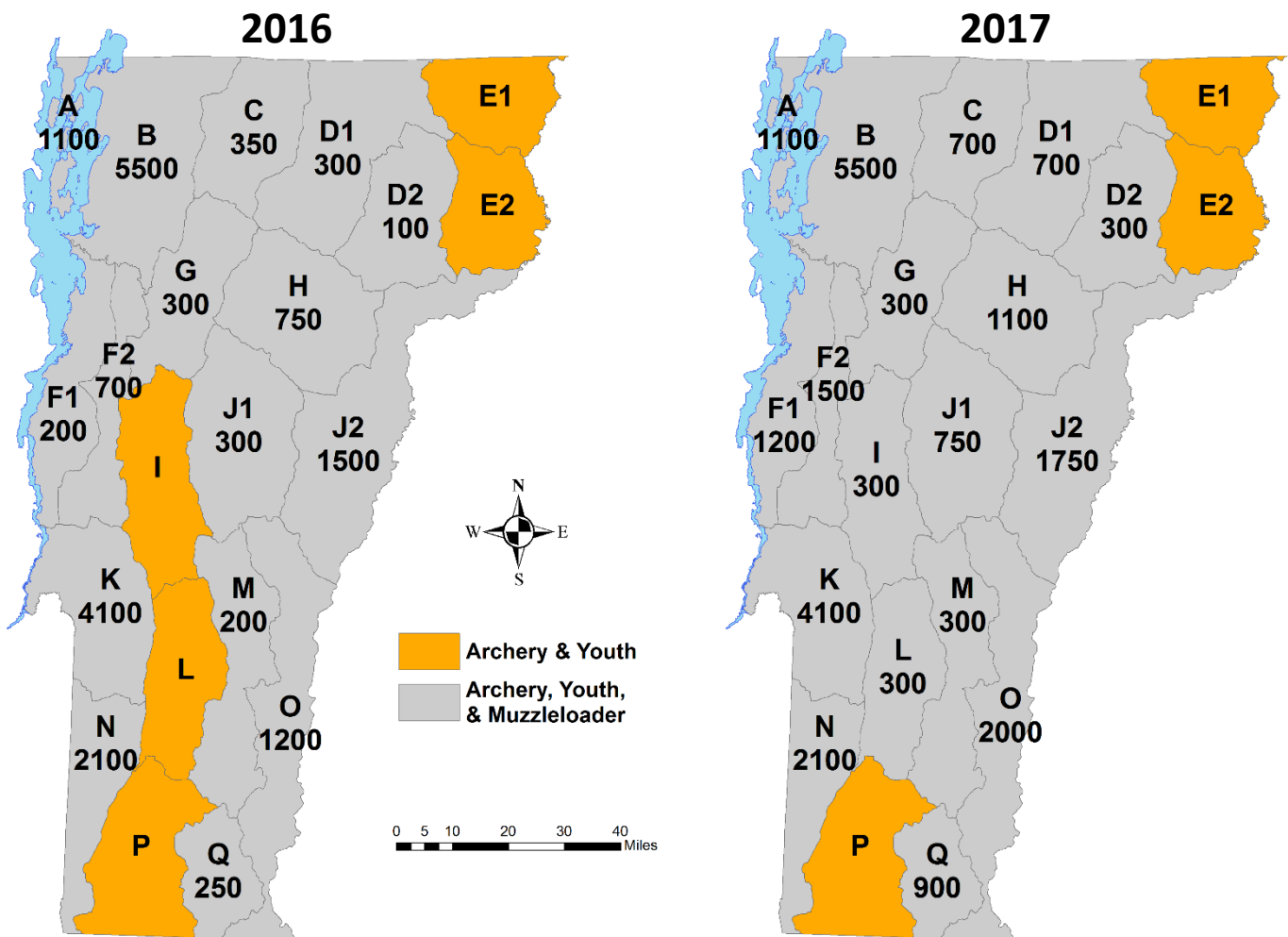


Figure 9. Wildlife management units open to antlerless deer hunting during the 2016 and 2017 (proposed) archery, youth, and muzzleloader seasons and muzzleloader antlerless permit allocations. No antlerless deer may be harvested during the regular firearm season.

Lake Plains (WMUs A, B, F1, F2)

The Lake Plains region contains some of the most productive white-tailed deer habitats in Vermont. Winter severity during 2016 and 2017 were well below the long term regional average and snow cover was limited during both winters. Estimated deer densities in WMUs A and B continue to be greater than regional density objectives. Yearling antler beam diameters have been declining in these WMUs relative to the statewide average (Figure 10), suggesting the deer population has negatively affected the habitat. Recent antlerless harvests appear to have stabilized populations, but a reduction is desirable in both WMUs. The current recommendations for WMUs A and B are the maximum number of permits the Department has been able to distribute in these WMUs, and the resulting antlerless harvest will take several years to reduce densities to target levels.

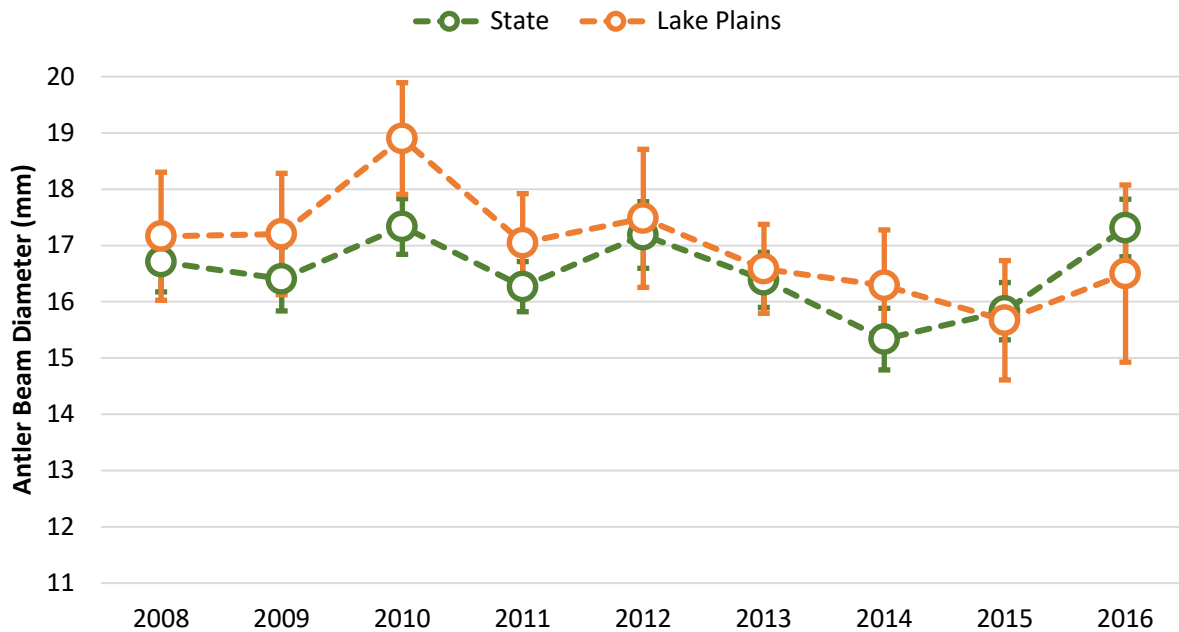


Figure 10. Yearling antler beam diameters in the Lake Plains region and statewide, 2008-2016. Data are from deer examined during the youth season. Error bars show 95% confidence intervals.

Deer populations in WMUs F1 and F2 have increased substantially in recent years and the recommended permit allocations are intended to stabilize the population in both WMUs. Regional density goals are not appropriate for WMU F1, given the limited amount of forested habitat. A density of 21 deer per square mile of habitat would equate to more than 84 deer per square mile of forest in this heavily agricultural unit. The F1 permit recommendation aims to stabilize the population near the current (2016) density of 15 deer per square mile of habitat.

Western Foothills (WMUs K, N)

The Western Foothills region is one of the most productive white-tailed deer habitat regions in Vermont. Most of this region saw minimal snow cover in 2017. Antlerless harvests have been insufficient to reduce deer densities in this region, and both WMUs remain above long term density objectives. Permit recommendations are the maximum number of permits the Department has ever been able to distribute in these WMUs (the same number were allocated in 2016 and 796 were not distributed). The

antlerless harvest resulting from this number of permits will not reduce deer densities unless next winter is quite severe. Alternative antlerless harvest strategies may be necessary to achieve density objectives in this region.

Mountains (WMUs C, G, I, L, P)

WMU C will be near the upper regional density objective of 18 deer per square mile, and the recommendation of 700 permits is intended to stabilize the population at that level. Deer densities in this unit are much higher along its western edge, primarily in the towns of Enosburg and Bakersfield. As a result, most antlerless harvest also tends to be concentrated in those areas and quite limited in higher elevation areas with lower deer densities. WMUs G, I, and L are within regional deer density objectives, so a few antlerless permits are recommended to allow additional antlerless harvest in valley locations along the edges of these units. These recommendations are intended to allow for moderate population growth. No permits are recommended for WMU P to allow for maximum population growth.

Northeast (WMUs D1, D2, E1, E2)

The mild winter of 2016 allowed for substantial population growth in all 4 WMUs, but deer densities still vary considerably within this region. The winter of 2017 was more severe in this region than elsewhere in the state, but the WSI was still below the long-term average (Figure 4). Deer density in WMU D1 will again be above the regional objective in 2017, however this WMU can likely sustain more than 15 deer per square mile. The permit recommendation in D1 is intended to stabilize the population at the current (2016) density of 18 deer per square mile. WMU D2 will be at the upper regional density objective, and the permit recommendation is intended to stabilize the population near that level. Relatively few permits are required to achieve stabilization in these WMUs due to more severe winters and relatively high antlerless harvests during the archery and youth seasons. Deer densities in WMUs E1 and E2 remain well below regional objectives and, as such, no antlerless permits are recommended. The Department does recommend allowing antlerless harvest during the archery season in these WMUs. Archery antlerless harvest was minimal (18 deer) in 2016, and occurred primarily near villages and along the edges of the WMUs where deer densities are somewhat higher.

East-central (WMUs H, J1, J2)

Deer densities in all of these WMUs are projected to be at or above the upper regional objective. Yearling antler beam diameters and reproductive data indicate that deer in this region are in relatively poor physical condition compared to other parts of the state (Figures 11 and 12). This does not appear to be a recent issue, and presumably stems from habitat degradation caused by chronic, historic overabundance of deer. Population reduction will be necessary to improve the physical condition of the regional deer population.

Permit recommendations in all 3 WMUs are intended to reduce the deer populations. Barring a severe winter in 2018, the population reductions resulting from this permit allocation will not be substantial. Continued higher permit allocations will be necessary, regardless of winter severity, to further reduce deer densities in coming years.

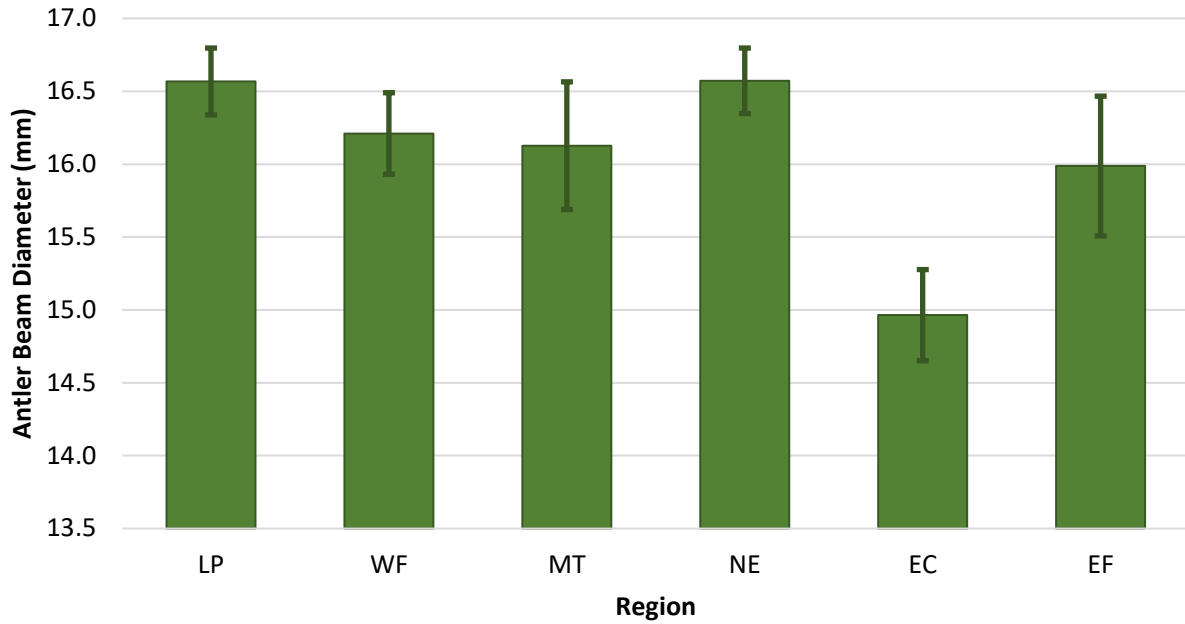


Figure 11. Yearling antler beam diameter, by deer management region, 2011-2015. Error bars show standard error.

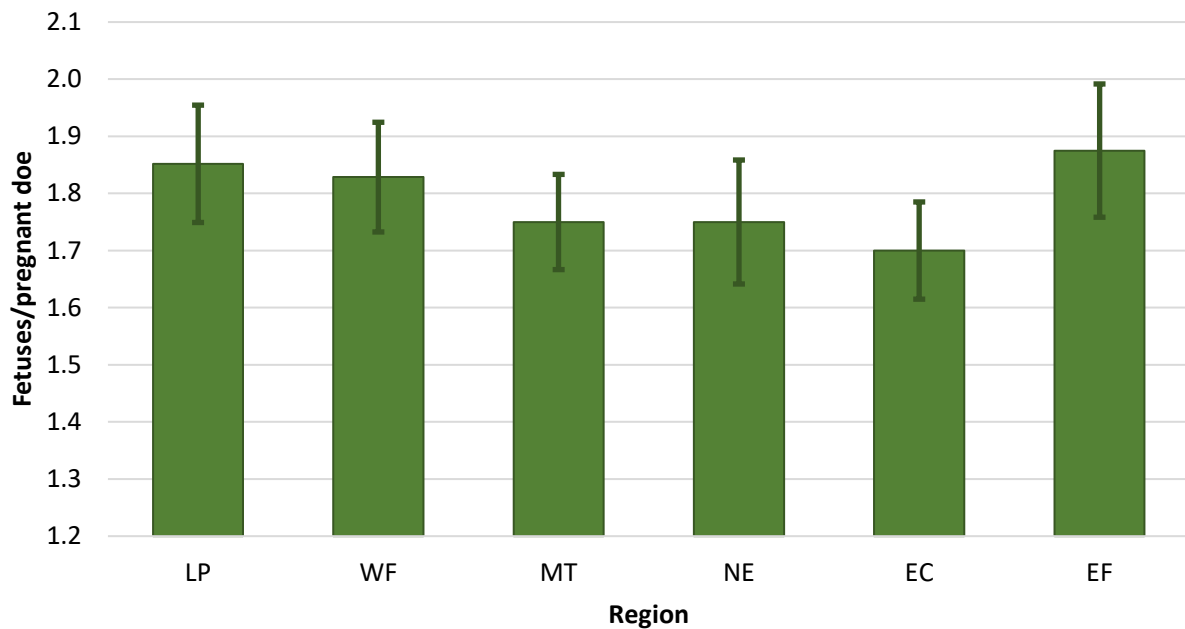


Figure 12. Fecundity of adult does (2+ years old), by deer management region, 2014-2016. Error bars show standard error.

Eastern Foothills (WMUs M, O, Q)

Density objectives in this region are relatively low to address issues of chronic deer browse damage to forest regeneration. Maintaining regional deer densities at these lower levels has resulted in improved physical condition and relatively good reproductive rates (Figures 12 and 13), and has reduced the number of complaints the Department receives about deer browse damage. However, low antlerless harvests in recent years have allowed populations to increase, particularly in WMUs O and Q, and both WMUs will again be above objective in 2016. While higher density objectives may eventually be appropriate for these WMUs, allowing the populations to remain at higher densities now could quickly eliminate any gains made in recent years. Therefore, permit recommendations are intended to reduce the population in both WMUs. Deer densities in WMU M are within regional density objectives, and the permit recommendation is intended to allow for moderate population growth while increasing antlerless harvest opportunity.

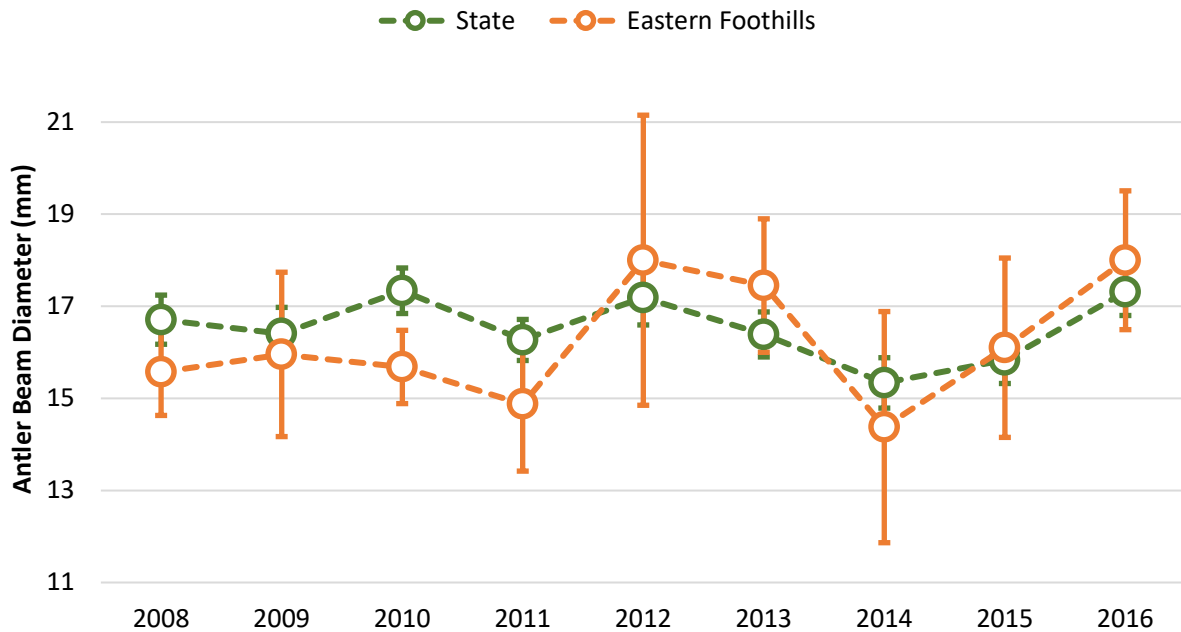


Figure 13. Yearling antler beam diameters in the Eastern Foothills region and statewide, 2008-2016. Data are from deer examined during the youth season. Error bars show 95% confidence intervals.

Table 1. Predicted antlerless deer harvest during the 2017 archery, youth, and muzzleloader seasons, by wildlife management unit.

WMU	Early Antlerless		Muzzleloader Antlerless			Total Antlerless	Total Adult Does ^a	*Doe Harvest per mi ² ^b
	Archery	Youth	Permits	Fill Rate	Harvest			
A	76	19	1100	11%	117	213	178	2.52
B	486	156	5500	14%	745	1387	1156	1.88
C	86	47	700	24%	168	300	248	0.64
D1	274	156	700	19%	134	564	456	0.80
D2	95	64	300	18%	54	213	171	0.44
E	22	18	0		0	39	31	0.05
F1	96	23	1200	13%	161	280	234	0.74
F2	129	43	1500	15%	222	394	328	1.22
G	100	24	300	22%	65	189	157	0.40
H	170	37	1100	16%	173	380	318	0.61
I	91	15	300	24%	72	178	149	0.35
J1	209	56	750	21%	155	421	350	0.66
J2	279	103	1750	19%	337	719	596	0.85
K	213	51	4100	11%	451	715	600	1.37
L	70	12	300	23%	69	150	126	0.35
M	35	9	300	18%	53	96	80	0.18
N	105	51	2100	11%	238	393	327	1.01
O	175	39	2000	17%	350	563	473	0.86
P	46	12	0		0	58	48	0.10
Q	44	20	900	13%	115	179	149	0.64
STATE	2801	955	24900	15%	3678	7434	6175	0.71

^a Adult does (1+ year old) are typically 85% of the archery and muzzleloader antlerless harvest and 70% of the youth season antlerless harvest.

^b Total adult doe harvest per square mile of deer habitat.

Table 2. Muzzleloader antlerless permit history by WMU, 2007-2016, and recommended permit allocation for 2017.

WMU	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
A	900	1100	1000	950	550	650	900	900	900	1100	1100
B	3500	5700	5400	5000	3200	3600	3400	3800	3350	5500	5500
C	0	0	200	500	0	0	400	400	100	350	700
D1^a	0	0	400	1100	175	250	450	850	100	300	700
D2^a	0	0	0	500	0	0	100	0	0	100	300
E^a	0	0	0	0	0	0	0	0	0	0	0
F1	1250	1800	1400	1100	450	525	250	175	0	200	1200
F2	1000	1300	2200	1700	425	575	450	275	0	700	1500
G	0	0	0	200	0	0	100	200	100	300	300
H^b	200	1200	750	800	225	300	150	550	100	750	1100
I	0	0	0	200	0	0	50	0	0	0	300
J1	100	800	775	1000	275	400	100	150	0	300	750
J2^c	1100	2800	1500	1750	775	1150	950	1000	400	1500	1750
K^d	250	1900	4800	4700	1400	2000	3900	5000	2250	4100	4100
L	0	0	0	200	0	0	100	0	0	0	300
M^e	0	0	0	300	0	0	0	0	0	200	300
N	500	3200	2900	2900	1425	1975	2100	3000	1850	2100	2100
O^f	1350	1350	1650	1950	675	750	750	750	500	1200	2000
P	0	0	0	0	0	0	0	0	0	0	0
Q^a	900	900	750	750	0	250	200	0	0	250	900
STATE	11050	22050	23725	25600	9575	12425	14350	17050	9650	18950	24900

^a WMU boundary changed in 2014.

^b Permit totals prior to 2014 are for former WMU H1.

^c Permit totals prior to 2014 are for former WMUs H2 and J2.

^d Permit totals prior to 2014 are for former WMUs K1 and K2.

^e Permit totals prior to 2014 are for former WMUs M1 and O1

^f Permit totals prior to 2014 are for former WMUs M2 and O2. A portion of WMU Q was also added to this unit in 2014.

Table 3. Muzzleloader antlerless permit fill rate by WMU, 2007-2016.

WMU	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	5-Yr Avg*
A	15%	13%	15%	12%	14%	11%	10%	11%	9%	10%	11%
B	20%	16%	16%	16%	16%	13%	13%	14%	12%	15%	14%
C			29%	28%			26%	22%	20%	29%	24%
D1*			27%	24%	27%	22%	26%	22%	10%	25%	19%
D2*				23%			21%			18%	18%
E*											
F1	16%	11%	11%	11%	18%	13%	12%	13%		15%	13%
F2	19%	19%	13%	11%	12%	15%	13%	12%		14%	15%
G				30%			35%	16%	7%	20%	22%
H*	25%	19%	22%	19%	24%	20%	18%	19%	12%	16%	16%
I				20%			24%				24%
J1	22%	20%	21%	16%	23%	16%	22%	12%		23%	21%
J2*	24%	21%	25%	18%	19%	16%	22%	22%	16%	20%	19%
K	26%	17%	17%	14%	16%	10%	11%	10%	10%	13%	11%
L				16%			23%				23%
M				15%						18%	18%
N	29%	17%	17%	14%	13%	11%	11%	11%	9%	13%	11%
O*	21%	20%	18%	13%	19%	15%	16%	23%	15%	15%	17%
P											
Q*	17%	12%	11%	8%		14%	12%			11%	13%
STATE	20%	17%	17%	16%	16%	15%	18%	16%	11%	15%	15%

*WMU boundary changed in 2014. Average fill rate is 3-year average from 2014-2016.

Public Meeting Comments

Department staff conducted 3 of the 5 required public deer hearings to interact with hunters, receive public comment on the status of the deer herd, and to satisfy statute and Board regulation. Hearings were held in the towns of Brattleboro, Island Pond, and Middlebury during March 21-25, 2017. The remaining hearings will be held May 11 in Randolph and May 16 in Manchester. Attendance at the March hearings ranged from 19 in Brattleboro to 39 in Middlebury. Most attendees expressed general satisfaction with the health of the deer herd, and were encouraged about prospects for 2017 given the mild winter. Many suggestions were offered regarding ways to improve our deer hunting regulations and/or the hunting season structure. Attendees were grateful for the opportunity to interact with Department staff and Board members. A compilation of the comments recorded at each of the meetings is provided in Appendix A.