VERMONT FISH & WILDLIFE DEPARTMENT

Annual Report to the Vermont Legislature on

Management of Moose and the Deer Herd

Submitted to:
Vermont Legislature
Senate Committee on Natural Resources and Energy
House Committee on Environment and Energy

Submitted by:
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Introduction

This report fulfills the requirements of 10 V.S.A. § 4082 and 4084.

§ 4082 states:
The final annual antlerless deer and moose harvest permit numbers shall be reported to the House Committee on Fish, Wildlife and Water Resources and the Senate Committee on Natural Resources and Energy as part of the annual deer report required under section 4084 of this title.

§ 4084 states:
Each January, the Commissioner shall publish an annual deer report.

Deer management is one of the most important projects administered by the Fish and Wildlife Department (herein referred to as the Department). Few Vermonters have not had some level of contact with deer and even fewer are without an opinion as to how to manage them. The Department's current 10-year management plan for white-tailed deer and other big game species covers 2020-2030.

Deer management goals are:

1) To maintain an abundant and healthy deer population,
2) To maintain adequate quantity and quality of deer wintering areas to sustain populations at regionally established target levels,
3) To maintain deer populations at levels that are socially acceptable and ecologically sustainable,
4) To minimize the number of deer-human conflicts, and
5) To provide a quality deer hunting experience for as many hunters as possible.

Antlerless Deer Permitting and Youth Season Process

Department staff conducted five (5) public deer meetings in spring 2023, which satisfied Vermont Statute and Fish and Wildlife Board regulations. Meetings were held in the towns of Orleans, Woodstock, and Manchester during March 20-24, 2023, and in Middlebury and Montpelier May 9 and 17, 2023. Approximately 117 members of the public participated in these meetings. The meetings were designed to receive public comment on numerous issues, including the status of the deer and moose herds, youth season, and moose and antlerless deer harvest recommendations. Questions and comments focused mostly on the health of the deer herd, hunting regulations, hunting access on private land, and habitat concerns. Attendees were grateful for the opportunity to interact with Department staff and Board members. Public comments and questions and Department responses from these meetings can be found in Appendix A at the end of this document.

On April 26, 2023, the Department proposed allocating 22,000 antlerless permits to be applied in 19 of Vermont's 21 WMUs during the 2023 muzzleloader seasons. This was 12 percent more permits than the Board allocated in 2022 (19,400), and distribution among WMUs was slightly different. In addition, the Department recommended that all WMUs be open to antlerless hunting during the 2023 archery season, the youth season bag limit be one deer of either sex in all WMUs, and that hunters during youth season be able to take any buck, regardless of antler characteristics. The Fish and Wildlife Board approved the recommendations as proposed for consideration during the public input process.

On May 24, 2023, the Fish and Wildlife Board approved the distribution of 22,000 antlerless deer muzzleloader season permits, antlerless hunting during archery season in all WMUs, and allowing youth season and novice hunters to harvest any deer regardless of sex or antler characteristics.

2023 Deer Harvest Summary

Hunters harvested a total of 16,845 deer during Vermont's five (5) deer hunting seasons in 2023. This represents a 4% decrease from 17,461 deer harvested in 2022. The total buck harvest, 9,850, was 2% more than the 2022 buck harvest of 9,619 and 6% more than the previous three-year average of 9,336.

Table 1. Vermont deer harvest by age-sex class and season, 2023.

Season	Adult Bucks	Adult Does	Male Fawns	Female Fawns	Total
Archery	1,319	3,169	256	218	4,962
Youth/Novice	337	462	83	90	972
October Muzzleloader	4[1]	696	55	64	819
Rifle	7,546				7,546
December Muzzleloader	644	1,573	183	146	2,546
Total	9,850	5,900	577	518	16,845

[1] *Adult bucks harvested during the October Muzzleloader season were legally "antlerless" deer, with both antlers less than three inches long.*

Moose Permitting Process

At the February 15, 2023 Fish and Wildlife Board meeting, the Vermont Fish and Wildlife Department proposed to issue 180 moose hunting permits in 2023. All permits were allocated to WMUs E1 and E2 (essentially Essex County) where greater moose abundance has contributed to greater abundance of winter ticks, which are having substantial detrimental impacts on moose health and survival. No moose hunting permits were recommended for the remainder of Vermont, as populations in those areas were below minimum hunting thresholds established in the Department's *2020-2030 Big Game Management Plan*.

The Department solicited public input on the proposed moose permit procedure at three (3) public meetings March 20, 23, and 24, 2023. Individual comments and questions on the status of the moose population can be found in Appendix B at the end of this document.
On April 5, 2022, the Fish and Wildlife Board approved the Department's moose permit recommendation. (Note: 78 moose were harvested during the 2023 fall hunting seasons.)

Appendix A: Summary of deer comments, questions, and department responses from 2023 public hearings

Orleans – March 20, 2023

Deer herd is healthy and at target.
Deer herd is stable. F&W is doing a great job.
Satisfied with management.
Too many deer in the '60s. The Department is doing a good job.

Information from these meetings needs to be more widely available.

Not convinced there are too many deer in Vermont.
You can't keep shooting does and have a good deer population.
Population of deer in D2 very low/poor habitat.
In J2, feel number of antlerless permits is too high.

Increase doe kill in rifle season if lack of muzzleloader hunters.
Open up rifle season to antlerless to achieve objectives.

Posted land is a big issue.
More access to private property, especially for archery season.
Difficulty with posted property and access to hunt.

Land Use property should be open to hunting.

Does getting shot in wrong areas due to too much posted land.

Multi-use areas need to accommodate hunting seasons.

Move youth season back to prior season dates – 1st weekend in November.

Consider starting archery September 1.

Maybe a longer early season to increase antlerless permit success.

Allow successful antlerless permit hunter ability to get a second antlerless deer to achieve objectives.

Find the suppressor law to be very beneficial to areas more sensitive to gunfire.

Concerned that several members of same family get antlerless permits / not equally distributed.

What is the state doing to increase youth participation?

Buck to doe ratio in Eden areas seems very good.

Need to manage state land in Eden area – need some logging.

Maple sugaring pipelines are a big issue.

Rather bow hunt than muzzleloader hunt in early season.

Don't see a need for the early muzzleloader season.

One buck rule is too restrictive. Sends too many hunters to NH.

Like one buck rule.

Really like no APR in NEK.

Would like to see 3 point on one side antler restriction.

Woodstock – March 23, 2023

Too much posted land.

Should be allowed to hunt land in Current Use since they're getting a tax break.
Consider tiered system like NH.

More turkey hunting.

Multiple muzzleloader tags at once.

VT hunters don't want to kill does.

Still people who carry permits who don't want to fill it.

Increase antler restrictions.

Are food plots helping?

> **Department Response:** Yes, but not nearly as much as most hunters believe they are. Food plots serve primarily to increase hunting success. They occupy a very small percentage to the landscape and provide food primarily at a time of year when it is already naturally abundant. While they certainly don't hurt, the impact of food plots on the overall health of Vermont deer is negligible.
>
> Forests account for 85% of deer habitat in Vermont. So, the best way to improve habitat quality for deer – and thus improve the physical condition of deer – is to manage for healthy, diverse, and complex forests. These forests provide critical food and cover for deer year-round.

What is the impact of killing does when they are pregnant?

> **Department Response:** It makes no difference when a doe is killed. Any time a doe is killed, it removes both her and her potential future offspring from the population. This is why deer population management focuses on female deer. Removing a doe in October (before breeding) is no different than removing that same doe in December (after breeding).

Make early muzzleloader either sex.

Make rifle season either sex.

How do we incentivize more youth to hunt?

No shooting spikes.

Don't like 4 deer limit.

Too many coyotes.

Reduce antlerless permits.

One buck only – no does.

Too many seasons going on at the same time.

Early muzzleloader is a bad time to put pressure on deer.

Manchester – March 24, 2023

Loss of habitat. Promote habitat management more.
Need more logging on National Forest.

Keep handing doe permits.

Too many antlerless permits.

Lower number of doe permits on the spine of green mountains.

Like permit numbers in P, N

No need to buy permit early in N.

Some buy permits to throw away.

Hunting has improved in southern VT.

Some areas have fewer deer due to habitat, but are in zones with a lot of permits.

Lots of posted land.

Higher tax breaks for unposted land in current use that improve wildlife habitat.

Move youth weekend back to where it was.

Promote youth hunting.

Like the antler restrictions.

No more spikes, WMU confusion.

Like one buck limit.

Consider earn-a-buck.

Want longer season.

Allow single shot, straight wall cartridges during muzzleloader.

Middlebury – May 9, 2023

I have faith in the Department's management. I worry about decreasing participation rates.

Totally agree with the recommendation, especially increasing permits in F1.

More concerned about what you're doing to address habitat problem and hunting participation problem.

Don't agree with how health is being assessed. There is nothing wrong with deer health, it's how it's being assessed.

Lack of mast should be factored into success of season.

No youths anymore. Was a good program. Changing rules all the time makes it less likely participation will increase.

Health seems good. Prospects for 2023 for (WMU I) are bleak – very low density of deer.

Think WMU I has too many permits – at least until the food sources improve.

If you kill too many does not sure how that will help. Think the deer herd is getting smaller.

I really don't like killing of does.

Don't think we need to increase permits in Addison County area.

Wish we could get more youth involved.

Montpelier – May 17, 2023

Same rules as last year = OK.

Sounds good. No comments.

Agree deer condition is low in J2. Content with the recommendation.

Continue as we have been.

Population stable in my area.

Hunting opportunity decreasing due to other users, mainly mountain bikers.

Consider moving youth season back to the traditional time of year.

Quotas can’t be met because of access to hunt on some properties.

Need more turkeys taken.

Appendix B: Summary of moose comments, questions, and department responses from 2023 public hearings

Note: comments are arranged from most common to least common. A total of 94 members of the public attended these three hearings.

Agree with the recommendation/Seems reasonable/Makes sense.
Similar comments were received from the majority of focus groups and individuals.

Concerned about habitat loss/lack of habitat because of less logging/clearcutting.

After listening to your presentation, I feel you are doing the right thing.

Was not very informed about this issue/ would like easier or better access to this information.

> **Fish and Wildlife Response:** All the information presented at the meetings is available on the Department's website www.vtfishandwildlife.com

Not seeing many moose/It's tougher to see moose.

Like more permits.

Do not like more permits.

Leave it as it is.

Consider moving regular season earlier (closer to rut) to increase success rates.

Consider moving season later due to weather (too warm in early October).

More moose than you think in certain areas.

See steadily increasing numbers of moose during past 3 years (WMU E1).

Open WMUs D1 and D2 to moose hunting.

Don't think there are as many moose as they estimate.

How does the Department estimate moose numbers?

> **Fish and Wildlife Response:** The Department's current method of estimating moose density (moose per square mile) in each WMU uses a model that relates the sighting rate of moose by deer hunters to moose density estimates determined by aerial infrared surveys. The model was originally developed in New Hampshire and later refined based on aerial surveys conducted in Vermont.
>
> Aerial surveys are too expensive to conduct every year, or in every part of the state. Using moose sighting rates by deer hunters provides an inexpensive and reliable alternative to monitor trends in moose numbers. The Department is also continually looking for new ways to

estimate and track changes in moose numbers. Current efforts largely focus on the use of trail cameras.

Why weren't there more ticks when the moose population was higher? Where did the ticks come from?

Fish and Wildlife Response: Winter ticks can be found across much of North America and have been present in Vermont for many decades – possibly as long as moose have been here. Following rapid growth of the moose population in the 1990s, it took some time for winter tick numbers to increase in response.

Although we have been more aware of the impacts of winter ticks on moose over the past decade, it is also now clear, in hindsight, that they were having some impact prior to that. There was a regional winter tick epizootic (moose die-off from winter ticks) in 2002, and probably a couple more before the next documented one in 2011. However, the very high moose numbers at the time as well as Department efforts to reduce moose numbers, masked the impacts that winter ticks were likely having.

Why not issue more permits now to decrease the population quicker?

Fish and Wildlife Response: Ideally, we would like to improve moose health as quickly as possible, which would require reducing the density of moose more quickly. However, there are several concerns that support a more conservative approach to reducing the population. In addition to biological concerns related to genetics and population stability, there is also the practical management concern of being able to reliably estimate the size of a rapidly changing population. Our current methods of estimating moose population size and trends are not well suited for this, which would make it difficult to know when the population had reached the target of 1 moose per square mile. This is further complicated by uncertainty about the severity of winter tick impacts each year and the effect they would have on population trajectory.

That said, it is important that we reduce moose numbers in WMU E within a reasonable timeframe and make actual progress improving the health of the moose population there. That will require adjusting moose permit numbers each year to ensure we are headed in the right direction.

How will climate change impact moose?

Fish and Wildlife Response: Moose are at or near the southern edge of their range in Vermont, so a warming climate will ultimately be detrimental to them. While moose could tolerate slightly warmer temperatures, other species that compete with or parasitize moose will benefit from a warmer climate. For example, shorter winters benefit parasites like the winter tick. They also help deer, and higher deer numbers could lead to an increase in brainworm – a parasite carried by deer that is often fatal to moose.

This is why it's so important that we get our moose population healthy. Healthy moose will be more resilient to whatever stressors might come their way as our climate warms. A healthy moose population should be able to persist in Vermont for many decades to come.

Are there winter ticks all over the state?

Fish and Wildlife Response: Yes, winter ticks can be found throughout Vermont and across much of North America. However, winter ticks typically occur at very low densities. Only in areas where moose are abundant (more than one moose per square mile) do winter ticks become so abundant that they cause problems for moose.

Most moose in Vermont will carry some winter ticks during the winter. But moose are big, and a few hundred – or even a few thousand – winter ticks are unlikely to cause any serious issues for a moose. In areas where moose and winter ticks are abundant, moose often carry tens of thousands of winter ticks which significantly impact their health.

Are winter ticks impacting moose in other states?

Fish and Wildlife Response: Yes, similar impacts can be seen across northern New England and in parts of southern Canada. Impacts have been well documented in New Hampshire and Maine as well as southern Quebec and New Brunswick. This region has one of the highest-density moose populations in North America.

Winter ticks are known to impact moose across the southern portion of their range. However, outside of the Northeast, these impacts have typically been sporadic and temporary.