

Chapter 1: Introduction

The Vermont Fish & Wildlife Department conserves and manages Vermont's wildlife on behalf of all Vermonters. Vermont law entrusts this stewardship to the department in accordance with the Public Trust Doctrine, and, in keeping with this statutory authority, the department has a long history of managing Vermont's big game species: black bear, moose, white-tailed deer, and wild turkey.

For the past twenty years, Vermont's Big Game Management Plans have provided the framework for management of deer, bear, moose, and wild turkey. These plans, updated every decade, identify issues these species face, establish sustainable population and management goals, and prescribe the strategies needed to achieve those goals. Combining wild turkey management with moose management may seem strange on the face of it, but a multi-species approach is appropriate because all four species face overlapping challenges and, as a group, represent the backbone of Vermont's hunting and wildlife-viewing opportunities. In addition, wild turkey's status as a big game species reflects the elevated focus it has received in wildlife restoration efforts in the last 50 years.

The Big Game Management Plan is created for the sole purpose of providing effective, proactive and coordinated long-term big game management. A single, comprehensive document is also cost effective compared to individual species planning efforts.

Guided by this plan, the department expects to safeguard the long-term presence of healthy and sustainable big game populations. When these species are effectively monitored and managed, Vermont residents will continue to enjoy the diversity of both consumptive and non-consumptive benefits that come with these species, and most importantly, Vermont residents will remain the greatest champions of these species and the habitats they depend on.

- **Benefits to wildlife:** The plan's focus is on sustainable, healthy populations of big game, thus contributing to the overall diversity, integrity and vitality of all of Vermont's natural systems.
- **Benefits to public:** The plan enhances opportunities for big game hunters, bird watchers, wildlife enthusiasts, and the public at large to enjoy the continued abundance of these species and Vermont's natural systems.
- **Benefits to economy:** The plan supports and boosts Vermont's significant wildlife-based economy.
- **Benefits to society:** The plan promotes appreciation for wildlife by minimizing human-wildlife conflicts and providing scientifically derived information about species and the complex ecological and ecosystem processes that affect them.

Wildlife as a Public Trust

The Public Trust Doctrine, based on Roman civil and English common law, and affirmed by the United States Supreme Court, is the principle that natural resources, including wildlife, are owned by the public and held in trust by the government for the benefit of current and future generations. Wildlife does not belong to private property owners or the government. Nor can individuals possess live wild animals as a commodity or as pets or farm animals. Instead, wildlife is a resource that must be conserved and protected for public benefit by state and federal management.

Developing the Big Game Management Plan

The Big Game Management Plan is based on current wildlife research and the department's most recent biological and ecological data. However, many of the issues facing Vermont's big game species are more social than biological. In some cases, such as the antler point restrictions that limit white-tailed deer buck take, issues can be partly social. To help address the human component of the big game plan, the planning process included a large, randomized telephone survey of 600 residents and 600 resident hunters in 2018. Vermont Residents' and Hunters' Attitudes Toward Big Game Hunting and Management (Big Game Survey) was designed to be representative of Vermont's population and touched on many topics. Topics included perceived big game population levels, knowledge of issues facing big game species, hunting preferences, wildlife damage and other human-wildlife conflicts. To track trends in opinions, some of the questions from the 1996 and 2007 Vermont Species Management Surveys were repeated.

Direct public input on the plan was also essential. During the development phase, two meetings were held in the summer of 2018 with hunting, conservation, forestry, and animal welfare-related representatives to hear their perspectives on the

key issues for each species and identify other issues of public concern that the key issues did not address. These issues were also presented to the Fish and Wildlife Board (Board) for their input. Strategy development began in the fall of 2018, after the conclusion of the Big Game Survey.

The 2020-2030 Big Game Plan process coincided with completion of the Comprehensive Deer Management Evaluation (CDME). In early 2013, the department, in collaboration with the Board, embarked on a full review of all Vermont deer hunting regulations, including potential new hunting opportunities. This initiative was partly due to the Board and department receiving a constant stream of petitions to change current hunting seasons and regulations, such as a longer archery season and a special flintlock season. The department and Board decided that a single, comprehensive evaluation of current and potential management approaches would be most effective for addressing these various concerns. As a result, in April 2015, the Board approved a set of regulation changes and agreed to a three-year evaluation of the effects of those changes along with further evaluation of remaining issues.

The result of the three-year evaluation was a new round of proposed regulations, including allowing the use of a crossbows for all hunters, the establishment of an early antlerless season and eliminating the antler point restriction of requiring two points or more on one antler in parts of the Northeast Kingdom and spine of the Green Mountains. These proposed regulations, some of the most sweeping in modern Vermont deer hunting, were presented to the Board in early 2019 and were the primary topics at that year's public deer and moose hearings. It should be reiterated that the Big Game Plan is not a regulation-setting document. However, parts of the plan, particularly related to deer population and age-class objectives, were discussed at the heavily attended hearings. More than 750 people attended the eight meetings.

The resulting deer hunting regulation changes, which took effect in 2020, were designed, in part, to address many of the issues identified in this plan and are reflected in many of the Big Game Plan's strategies. The new regulations, for instance, allow for the establishment of expanded archery areas to address suburban deer conflicts. The effects of these changes extend beyond deer. For example, expanded deer hunting opportunities may result in additional bear harvest and reduce the need for more aggressive bear harvest strategies to maintain the bear population within objectives.

Review of the Big Game Plan began in fall of 2019. In September, the department presented the issues and proposed strategies to the Board for their input and then later in the month to stakeholder groups, most of whom were involved in the 2018 issues meeting. A list of invited and attending stakeholder groups is included in Appendix A of this Plan. Public comment on the final draft was to begin in the winter of 2020 and conclude by the spring. However, the COVID pandemic delayed the completion of the final draft due to an extended public comment period.

The draft plan was posted on the department's website on March 3, 2020 and sent to stakeholders on March 27. An in-person public meeting was also scheduled but was subsequently cancelled as COVID guidance evolved. A virtual public comment meeting was held on August 5 and the public comment period ended on August 13, 2020, resulting in the document being available for 163 days to comment upon.

Despite the extended timeframe, only a handful of comments and questions were received until the public meeting, of which 18 were taken from the approximately 40 people who attended. An additional 134 comments were then received between the meeting and end of the comment period. The vast majority of the comments were form responses, or variations of the form response. Primary objections were the plan's focus on hunting and the approach to bear and moose management. A number of the comments also addressed issues that were well-beyond the scope of this document, such as trapping and department governance. Comments received on the plan as well as responses from the department, are included in the Appendix B and C of this document.

As a result of the comments, some language was clarified in the final plan and additional content on hunting bears with the use of hounds was added.

Overarching Management Issues of Significant Concern

1. Declining Hunter Numbers

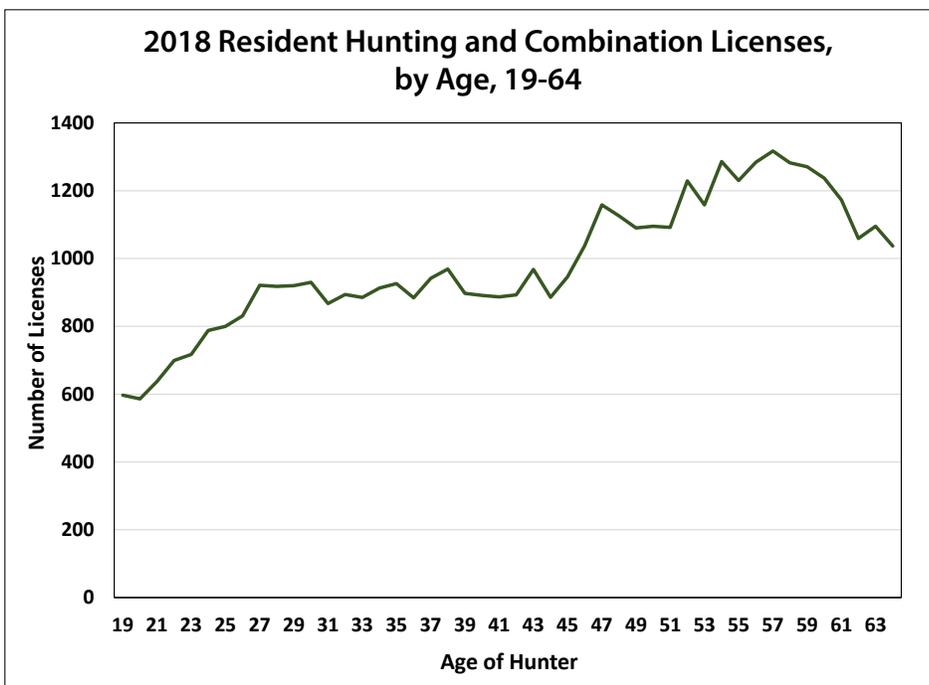
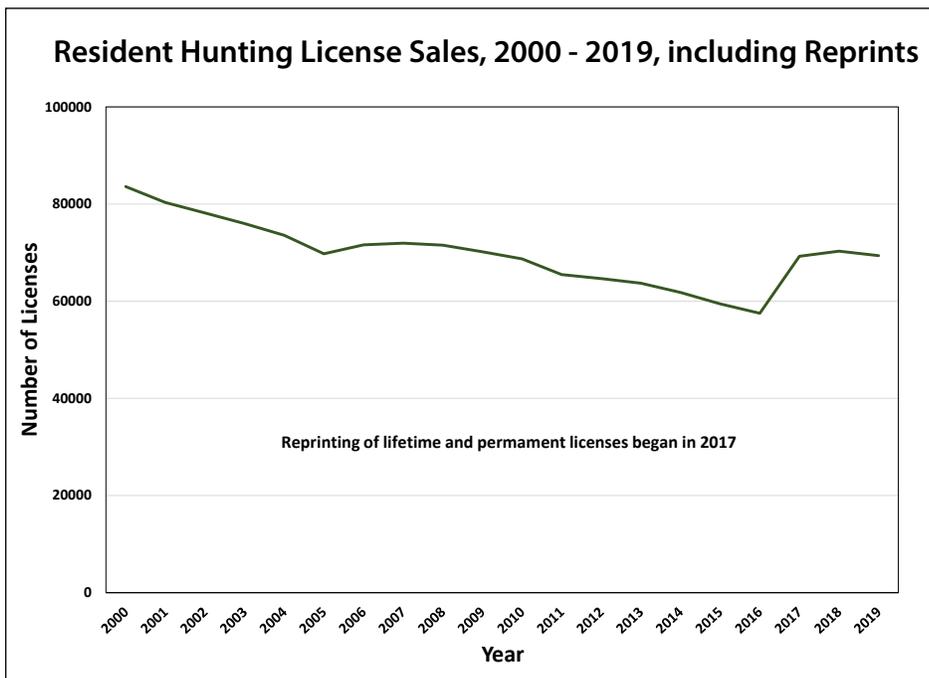
Vermont's hunters reflect the state's aging demographics. The median hunter age, 44 years-old, is nearly identical to Vermont's general population and there is both a declining number of young hunters and young people across the state. As older hunters become eligible for permanent licenses and then age-out completely, there are fewer people to take their

place. This has contributed to a steady decline of 2-3 % per year in resident hunting and combination hunting/fishing license sales over the last two decades. Yearly license sales are not, however, the same as the number of hunters in the field. Resident landowners, and nonresident landowners who do not post their property, do not need licenses to hunt on their own land, and, more importantly, many resident hunters hold permanent and lifetime licenses. These license types are not considered sales after the first year of purchase, and the department has only been able to require yearly ‘reprints’ from those planning to hunt since 2017. When 2018 and 2019 reprints are added to license sales, the totals show a much smaller (less than 1%) decline in hunting participation than sales alone suggested. More years of reprint data are needed but, in the end, the number of permanent licenses and the majority of reprints, are directly related to the state’s demographics. Their percent share of total hunter numbers will increase during the plan’s timeline although they can only decrease in absolute numbers.

Until recently, hunting participation rates among most age groups in Vermont have remained steady, even if the number of people in those age groups have declined. Starting in 2013, a noticeable drop in participation among 20 to 24-year-olds was noted and it appears to have continued in younger cohorts since then. Although, this is complicated

by lifetime licenses and older 2010 census data. Youth deer weekend permit numbers seem to confirm this trend. Between 2015, when the department was first able to accurately track youth deer weekend participation and 2018, there was an 18% decline in the issuance of these no-cost tags.

Using estimated demographic and participation trends, a predictive model by the department estimates total hunting and combination hunting/fishing license sales of approximately 36,000 by 2030. This represents a 25% decline from 2017, raising legitimate concerns that the department will eventually struggle to meet big game population objectives through hunter harvest and accurately monitor wildlife population indices with hunter derived data alone. More analysis is needed to fully understand the ramifications, as the model utilizes older (2010) census data and doesn’t include youth sales as well as lifetime and permanent license reprints.



While declining hunter numbers represent a significant challenge to achieving the department’s mission, it is worth noting that Vermont’s hunting tradition is far from diminished. Today’s hunters are more avid than previous generations. Despite declining base license sales, big game add-on licenses (archery, muzzleloader, turkey, and early bear) are stable; 50% of hunters buy at least an archery or muzzleloader tag, and a quarter of hunters purchase both archery and muzzleloader tags. Also, as of 2018, one in four resident Vermont males is a hunter, female participation has increased, and the state’s total hunting participation rate is approximately 14%. This remains one of the highest rates east of the Mississippi River, comparable to Wisconsin, West Virginia and Maine, and well above the national average of 4%.

2. Suburbanization and Support for Hunting

The Big Game Survey reinforced what every previous study had found: the vast majority (86%) of Vermonters support regulated, legal hunting; however, sustaining this level of support from residents in the coming decade could prove challenging. Despite Vermont’s stagnant population growth, an increasing number of residents, and almost all new immigrants to the state, are moving into urban and suburban greater Chittenden County. In 2018, 35% of the state’s population is estimated to reside in the (U.S. Census Bureau) Burlington metropolitan area, up from 30% in 1990 and 33% in 2000, and that percentage is expected to continue to steadily increase in the next decade.

If national trends hold, suburbanization will likely lead to less knowledge about wildlife, lower exposure to hunters, hunting and hunting as a tool for managing wildlife populations, more emotional and familial feelings towards individual animals, and less hunting and fishing participation. These factors have generally been associated with less understanding and support for regulated hunting. The 2018 Vermont Fish and Wildlife Department Media and Communications Survey suggests this may already be occurring. It found support for hunting is still very high in greater Chittenden County (82%) but that support tended to be more moderate versus the strong support seen in the rest of Vermont. Support for and, most importantly, understanding of the value of hunting and fishing to successful wildlife and habitat conservation is vital because hunting and fishing are intricately tied to human-wildlife conflict management as well as fish, wildlife and habitat

The Full Values of Hunting

Hunting is both an essential management tool and a Vermont tradition. It keeps wildlife populations, particularly big game, in line with what Vermont’s fields and forests can support and at levels Vermonters will tolerate. It serves as the financial backbone of funding for wildlife conservation and generates millions of dollars in revenue, particularly in rural communities, outside of the tourist season. And, for hunters and their families, hunting provides hundreds of thousands of pounds of local, organic, sustainable meat. These benefits are easy to grasp, however the values of hunting go well beyond the measurable or tangible:

Full Immersion in Nature

Getting outside and being in nature is a top reason why people hunt. However, this goes much deeper than just ‘being outside’. The sights, smells and sounds a hunter experiences when they are participating *as part of nature* rather than just observing it can be a key element.

Physical and Mental Health

Numerous studies in the U.S. and around the world are exploring the health benefits of spending time outside

in nature. This includes hunting. Hunting and personal health are inseparable, particularly with Vermont’s landscape. Scouting is crucial for success and many hunters’ workouts begin long before the seasons open. Real, quantifiable results from hunting have included a wide range of outcomes from reductions in stress and blood pressure to improvements in focus and mood.

Identity

While hunter numbers are declining, 14% of Vermonters still hunt, including one in four males. These hunters all have family and close friends which means most of the state still has a close connection with hunting and almost every Vermonter knows when it’s deer season because of the resultant sales, breakfasts, and craft fairs. Hunting defines the Vermont character for many people. It is deeply rooted and woven into the rich cultural heritage and belonging that people feel with the outdoors and other members of their community.

conservation funding and research. The department will continue to emphasize this value by focusing on strategies that increase our understanding and use of hunters and anglers as a resource, while also seeking strategies that increase access to hunting and fishing, and to the diverse values of wildlife and habitat in general.

3. Climate Change

Vermont continues to experience the effects of a changing climate. Storms are more intense and frequent. Winters on average are trending milder and shorter. There have also been dramatic increases in tickborne diseases, invasive species and other environmental changes that are a result of long-term changes in Vermont's climate. As the climate changes, so too do the habitats that big game animals depend upon. Fortunately, unlike many of Vermont's wildlife, deer, bear and wild turkeys are highly adaptable to the current challenges of climate change in Vermont. Unfortunately, moose are struggling due to winter ticks.

Wider extremes in weather patterns may cause more dramatic shifts in natural food abundance. Examples of this would be spring vegetation and hard/soft mast like berries, apples, acorns, and beechnuts that can be significantly influenced by early and late frosts as well as droughts. This will likely increase conflicts with humans and could result in wider population swings.

What actions can the department take to prepare for climate change? Land and habitat management. The department's newly created Vermont Conservation Design, a vision and guide to a healthy forested landscape, is a conservation tool that prioritizes key habitat blocks and movement corridors that maximize the ecological function of landscapes, habitats, and their species. Maintaining forests and connections between them for wildlife to move, will ensure proper habitat for moose, deer, bear, and turkey in the future. In addition, collaborations with researchers to better understand climate change effects on wildlife that occupy large ranges in these priority habitat blocks are also vital to identifying and implementing climate change adaptation strategies.

4. Promoting Utilization

National surveys have found hunting for meat has surpassed simply getting outdoors as the primary motivation for hunting. In Vermont, long held traditions of community game suppers and the department's very popular game processing seminars help support hunting as a sustainable local food source. However, as hunter numbers decline, bag limits may need to increase, particularly to sustain healthy wildlife populations in areas with high human-wildlife conflict or where habitat damage occurs from overabundant wildlife. Even if individual success rates rise too, there are limits to how much deer,

Hunting with Non-Lead Ammunition

Hunting with non-lead ammunition is good for humans and for wildlife:

- Lead is a naturally occurring element with many beneficial uses, but it is also a toxin that has been removed from many products including water pipes, paint and gasoline.
- Lead shot and bullet fragments in meat may be eaten by people, and fragments in gut piles and meat can be ingested by wildlife scavengers such as fox and eagles.
- If ingested, lead can be toxic. Toxicity depends on the level and frequency of exposure.
- Although regional research has shown that hunting with lead ammunition has no significant population level effect on wildlife species in Vermont, lead ammunition is a well-defined pathway for toxicity to animals that ingest it.
- Lead particles in game meat are often too small to detect by sight, feel or taste. Using non-lead alternatives can prevent lead exposure to people and wildlife.
- Non-lead ammunition is becoming widely available and reasonably priced and may offer better performance than lead.
 - Non-fragmenting solid copper and copper alloy bullets are loaded in most popular big game hunting calibers, including for muzzleloaders.
 - Highly frangible, non-lead small caliber bullets (compressed copper or tin powder) are available in both centerfire and rimfire cartridges.
 - Non-lead shot (steel, tungsten, bismuth and other alloys) is widely available.
- To learn more about switching to non-lead ammunition and tips to finding the right non-lead ammunition for your firearm visit www.huntingwithnonlead.org and www.nonleadeducation.com.

bear and turkey meat hunters and their families can consume. The department will continue to explore creative programs, like recent seminar series involving Vermont's pioneering local food movement and partnering with local food donation organizations to promote and expand the use of this important local food resource.

5. Habitat Loss

Despite some regulatory protections and sluggish human population growth, the loss of critical habitat remains a serious threat to the long-term viability of all Vermont's fish, wildlife, and plant species. Among the new, more urgent challenges is the need to maintain an adequate supply of quality, inter-connected habitats that can allow for the safe movement of wildlife across an increasingly fragmented landscape. As mentioned in the Climate Change section, Vermont Conservation Design provides a multi-scale spatial identification of high priority lands and waters essential to maximizing ecological integrity. Together, they comprise a connected landscape of large and intact forested habitat, healthy aquatic and riparian systems and a full range of physical features on which plant and animal communities depend. The department will continue to address this issue of habitat loss with a focus on understanding and addressing climate change effects, conserving wildlife movement corridors and priority habitat and integrating information across departments and disciplines aimed at increasing the resiliency and viability of all wildlife species, which includes deer, bear, turkey, and moose.

6. Access to Land

Public support for hunting, liberal seasons and proactive population objectives is still unlikely to achieve healthy populations of big game species if hunters are severely limited by where they can hunt. The amount of legally posted property in Vermont has been relatively stable over the past decade, representing just 4% - 5% of the state's private acreage. However, the highest rates of legally posted land overlap largely with areas of high deer densities. Antlerless muzzleloader deer permits are a key tool used to manage the deer population in Vermont. However, permit sales have fallen very short of management objectives in many areas with high-density deer populations, and sales were so far below allocations in some WMUs that the department stopped basing permit allocations on actual harvest objectives. The amount of legally posted land also fails to give an indication of the amount of informally posted property or the amount of once-huntable land now lost to development. Posting, of course, does not always preclude hunting. The Big Game Survey found 35% of all hunters have permission to hunt legally posted land. However, reduced land access and posting can create significant challenges for wildlife managers and hunters alike and are always top concerns voiced by the public at deer hearings, particularly in Franklin and Rutland counties, which have the highest posting rates. Access to land for hunting is a major issue of concern for the department because it hinders the ability to achieve a healthy deer population, particularly in areas where overpopulated deer are negatively affecting wildlife habitat quality and overall ecosystem health.

Public lands open to hunting are widely distributed across Vermont with more than 800,000 acres under state or federal management and thousands more managed by municipalities. The Vermont Agency of Natural Resources manages more than 333,000 acres of this total as wildlife management areas, state forests and state parks and holds easements on over 123,000 acres of conserved commercial forestlands that guarantee public access. The Green Mountain National Forest and Silvio Conte National Wildlife Refuge comprise most of the federally owned public lands in the state.

Nevertheless, with the exception of department and USFWS lands, hunting access to public lands and easements may change in the future as interest in other outdoor recreation grows. Along with increasing pressure towards suburbanization, diverse recreational values are spurring a competition for space, particularly on town forests and new acquisitions and easements. Research on how these recreational values intersect is a somewhat new field, particularly in Vermont, and the department has a large knowledge gap on future consequences of growing diverse recreational interests and how to balance these uses to best achieve wildlife conservation objectives. Access to land for hunting remains an important tool in achieving these conservation objectives, particularly for sustaining healthy populations of big game species. The department will continue to maintain access to land and explore ways to better understand diverse recreational users to best achieve big game species objectives.

7. Human - Wildlife Conflicts

Increasing development in and around deer, turkey and bear habitat is already leading to increased conflicts with humans. This is likely to increase over the next ten years. Read individual plans for detailed explanations. The department addresses big game issues in accordance with the following principles that are guided by legislation and human safety: 1) protection

of human health and safety comes first; and 2) the animal must be handled responsibly and humanely in the cases where it must be confronted, displaced/removed or euthanized. Monitoring the number, extent, and type of conflicts, as much as possible, will remain an integral component of the department's wildlife conflict management strategy. The department will also promote actions to avoid or limit the possibility for conflict, such as providing guidance materials, information resources, communication with towns, and coordination with game wardens to collect valuable data that inform strategic planning to address locations where a high number of conflicts occur.

8. Collection of Biological Data

Big Game Reporting Stations perform a vital data collection service for the department and provide convenience to hunters to legally register their game. Most check stations are located at general stores and small-town businesses. Many of these businesses are struggling to survive and, every year, some don't make it. So far, replacement stations have been found, but proposals, such as increasing the per-animal reimbursement may help encourage these businesses to keep working with the department in the near term. However, long-term strategies are needed to ensure the department can continue to collect valuable information from harvested species. These strategies will focus on employing technological advances that allow for remote or automated data collection and continuing to maximize electronic data input mechanisms for all projects.

Overarching Management Strategies

1. Maximize opportunity for big game hunters, including expanding season lengths and bag limits, where possible, to meet big game population objectives.
2. Recruit new hunters with the primary purpose of introducing new, diverse audiences to, and maintaining support for, hunting. This strategy will include involvement of big game project staff.
3. Encourage the responsible utilization of big game species. This is part of the traditional Vermont hunting ethic, and fostering this will help maintain support for, and promote an understanding of, hunting while encouraging more bear and antlerless deer harvest, if needed. This could include increasing the amount of utilization-related content on the website and reviewing the current statutory window to sell big game carcasses during the open season and 20 days thereafter to connect the public to hunting and wild game.
4. Use Vermont Conservation Design to identify priority big game habitat for conservation, and to guide big game climate change adaptation strategies.
5. Continue to provide outreach on the impacts of climate change on big game species.
6. Advocate for public hunting access to lands enrolled in the Use Value Appraisal Program (Current Use) and conserved lands.
7. Continue outreach to private landowners, municipalities, non-profits and other landowners on the value of allowing hunting access.
8. Develop a single, comprehensive database to track and record human-wildlife conflicts, including those involving big game species.
9. Maintain mandatory big game reporting but investigate ways to make it easier for hunters to check their game in, particularly with the use of technology.