

2015 - 2020

Newfoundland and Labrador Moose Management Plan



Newfoundland and Labrador Wildlife Division
Department of Environment and Conservation


Newfoundland
Labrador

Message from the Minister



Newfoundland and Labrador is known for its rugged shores, open spaces and rich wildlife. These all contribute significantly to the economy of the province but equally important, they are pivotal to our culture and our traditional way of life.

In our province, especially on the island portion, the moose population has become a particularly valuable natural resource. People rely on moose for food and recreation, while residents and tourists alike often find an intrinsic value in their existence. Moose help sustain a vital outfitting industry that is recognized worldwide and contributes to our rural economy in direct employment and other indirect benefits.

We recognize and acknowledge the many significant challenges in the management of such an important resource. Moose-vehicle collisions on our highways, access to the annual moose harvest and agricultural-based conflicts with moose are a few of the issues the Provincial Government must consider in developing annual management plans for moose.

This five-year moose management plan is the strategic document that provides clear direction to meet current and emerging challenges over the coming years. Given the role that the Department of Transportation and Works plays in the management of our roads and highways, the plan is a collaborative one between the two departments to ensure all dimensions of moose management are considered including efforts to mitigate moose-vehicle collisions.

The plan builds on success and innovation in moose management developed by biologists, scientists and researchers and it considers emerging issues and social considerations that are non-hunting in nature. This plan focuses efforts on the adaptive, proactive, and coordinated delivery of moose management.

A key component in the development of this plan was the public engagement process that the department undertook in the Fall of 2012. This consultation involved the delivery of eight public engagement focus group sessions across the province designed to garner feedback on current and future management decisions, and to understand how the public views the resource.

These sessions, along with a web-based survey and receipt of written submissions, clearly demonstrate the interest in sustaining the moose population, while at the same time asking us to be innovative and adaptive in mitigating for negative values, including moose on our highways.

In reading this plan, you will see the efforts made by the department to address the many challenges of moose management. The plan outlines the vision, goals, objectives, and actions that the department will implement over the coming years.

A handwritten signature in black ink that reads "Dan Crummell". The signature is fluid and cursive.

The Honourable Dan Crummell
Minister



Environment and Conservation

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THE VALUE OF MOOSE

Moose (*Alces alces*) are an important and valuable resource to the Province of Newfoundland and Labrador, providing significant sustenance for residents and recreational and economic opportunities to both residents and visitors.

Moose contribute significant economic benefits to the provincial economy and provide substantial employment opportunities in rural parts of the province. Residents have a strong historic tie to their environment for sustenance with moose providing approximately eight million pounds of fresh meat annually. Demand for a hunting licence continues to greatly exceed the availability of the resource, with over 70,000 hunters competing annually for a license from the provincial moose quota.

In the past, management practices focused on providing a sustainable yield of moose that maximized hunter opportunity and success. However, in recent years, there has been concern expressed that non-consumptive values associated with hunting moose have not been given due consideration; including human-wildlife conflicts such as moose-vehicle collisions (MVCs), nuisance moose management issues, or the environmental effects of hyper-abundant moose populations. In response to these concerns, the Department of Environment and Conservation has developed a five-year moose management plan, informed by public input, for the period 2015 - 2020.



Moose are an integral part of the social fabric in Newfoundland and Labrador and hunting traditions are passed down over generations.

MOOSE MANAGEMENT OVERVIEW

Moose were first introduced to the Island of Newfoundland in the late 1800s with the hope that the population would increase and provide residents with a new game species and source of fresh meat.



The first introduction in 1878 involved two moose released to the Gander Bay area. In 1904, an additional four moose were introduced in Howley. From these introductions, moose rapidly colonized their new environment and were distributed across the Island by 1945.

Moose on the Island of Newfoundland have no significant predator such as wolves, although black bears are known to prey on moose calves. In the absence of a top predator like wolves, hunting continues to be the primary mechanism for managing moose populations in Newfoundland.

The moose population was allowed to expand without targeted hunting until 1935, when a Bull Only hunt was introduced in some regions. More licenses were issued in 1945 but the hunt remained a Bull Only harvest until 1953. In that year, an Either Sex harvest was introduced to better manage the increasing population following observations of over-browsing in the interior portions of the Island. Close to 5,000 moose licences were issued in 1953 and a total reported kill of 1,540 moose (998 cows) occurred that year.

In 1954, hunting zones were established to distribute hunting pressure and target harvest toward high-density moose areas in the central part of the Island. The moose population experienced its first population peak in the late 1950s, but then began to decline due to a combination of hunting and lower reproduction, the latter resulting from decreased food availability. The population continued to decline throughout the 1960s.

Starting in 1973, and in response to declining populations and a recognized need to better manage hunting and habitat, a revised moose management program was initiated. The Island of Newfoundland was divided into 10 moose regions according to known habitat quality at the time and the amount of access provided by roads. Each region was subdivided to create 36 Moose Management Areas (MMAs). This delineation helped to distribute the harvest and to provide for harvest in remote areas while at the same time limiting over-harvest in more accessible areas.

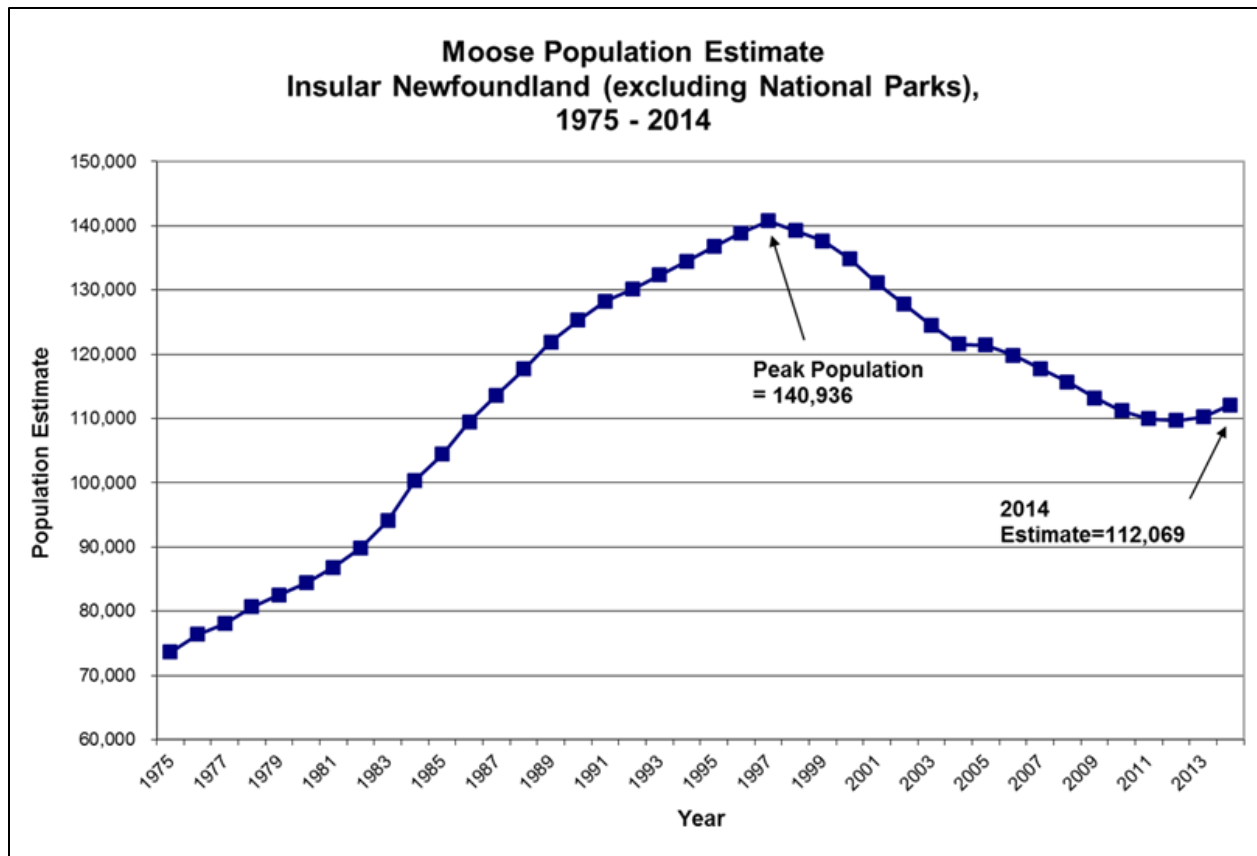
Good moose habitat is defined as areas consisting of mainly forest and scrub (small trees or shrubs). Poor moose habitat was generally considered bog and barrens. Based on research at the time, target populations of two moose/km² of forest and scrub were established for each MMA. This system of MMAs was eventually expanded to the current 52 MMAs, and provides an effective adjustment for the moose population based on the amount of good versus poor habitat within an MMA.

A separate hunting quota was established for each MMA relative to its population estimate. Management goals for each population could be achieved through the increase or decrease of the quota. Success in achieving individual MMA management goals was influenced largely by hunter access. License returns, which show hunter success and jawbones which provide biological information on the age, sex and size of the animals submitted by hunters were used to track the change in the populations. Since the early 1980s, dedicated funding has allowed population surveys of between two and four MMAs annually. These surveys provide updated population estimates, which aids in the annual quota adjustment and helps inform management decisions.

Management planning continues to be conducted annually through a series of meetings held by Wildlife Division biologists who consider both the biological information available for each MMA, as well as relevant regulatory and social considerations important to ensuring a safe and sustainable harvest. Quotas are recommended based on this annual meeting.

After adopting the 1973 strategy that provided for the delineation of MMAs and a mechanism to distribute harvest, populations began to increase again until the mid- to late 1990s. During this period the population was estimated at just over 140,000 moose. Increases in quotas since the late 1990s have decreased the Island-wide population to its current estimated population of just over 112,000¹ animals. A decline in reproduction resulting from a decrease in available food resources in some regions of the province has also contributed to some MMA declines. These two factors are very similar to the situation witnessed during the 1960's decline in Island-wide moose populations.

¹ Excluding National Parks



The Role of Selective Harvest

Sex and age-specific harvesting has been used in moose management since 1987 to increase the general productivity of the populations by focusing the harvest on calves and adult males. This approach allows the proportion of productive females, the mean age of females, and the annual recruitment rate to increase while maximizing hunting opportunity. Conversely, if the goal is to decrease populations, managers can focus harvest on adult females.

Big Game Licensing - A Historical Perspective

Prior to 1973, the big game licensing system involved a general application process and the ability to purchase licences at government offices or at entry points to management zones once the season had opened. In 1974, to increase the number of moose licence returns, government introduced a draw for a free moose licence equal to one per cent of the quota for each moose management zone. That same year, government also implemented a system that allowed big game hunters to hold a moose or caribou licence only in alternate years. Licences were issued using a manual draw process. The success and support for the resident licence draw process established in 1974 and 1975 led to the development and implementation of a central-computerized big game license draw system that began in 1976 and allowed for a priority pool licensing system to be established in 1977. That same year, government introduced a mandatory Hunter Capability Test for all moose, caribou and black bear hunters on the Island and required it as a condition when applying for a big game licence.

The big game licence draw system was utilized to support government's introduction of a selective harvest program for moose that began in 1987. The priority pool and big game licencing draw process for resident moose licences continued virtually unchanged until 2003, when the use of online technology allowed residents to apply for moose licences and make payments online. The ability to file a big game licence return online was implemented in 2007. In 2008, improvements were made to the priority pool numbering system. The number of applications received in the big game licence draw in 2013, either online or through the mail, was over 73,000 and involved 63,897 residents interested in an individual or party licence. In some years, the total number of residents applying in the annual big game licence has reached nearly 90,000 applicants.

OBJECTIVE AND SCOPE OF THE FIVE-YEAR MANAGEMENT PLAN

A five-year strategic plan for moose management will provide a framework and direction for moose management for 2015-2020. This plan is not intended as a replacement for the existing annual planning process, but will be used to guide the annual plans completed each year by the Wildlife Division and subsequently approved by the Minister of Environment and Conservation. The annual planning process will continue as a tool in establishing MMA-specific quotas, season dates, boundary changes, and other specific management-related issues.

Results of the annual planning process are provided to the public through the Hunting and Trapping Guide. The Hunting and Trapping Guide will also include an update on the progress towards the implementation of this five-year plan.

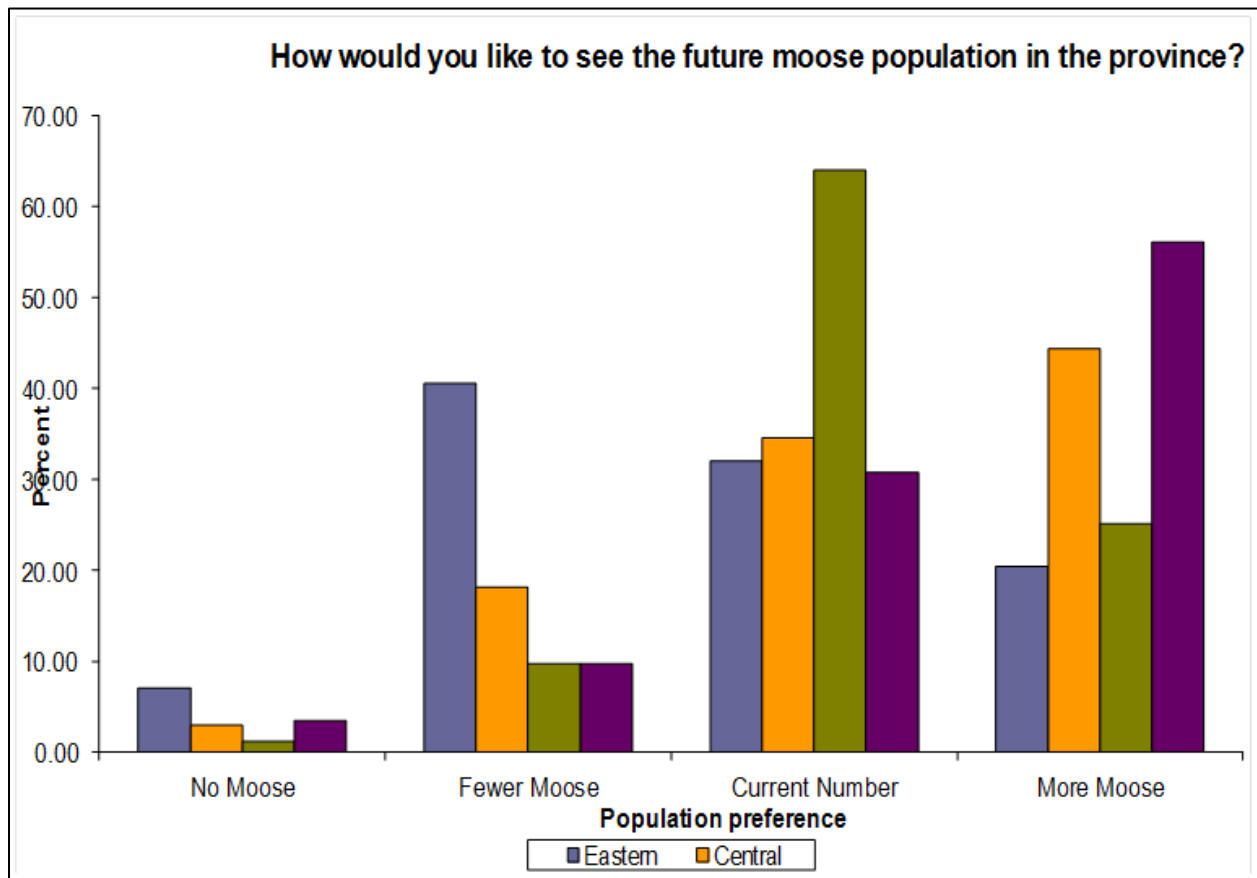
This five-year plan will allow managers to work within an adaptive framework, recognizing that moose abundance and management priorities will change over time. Importantly, it provides a framework and direction for incorporating the range of issues related to moose management across the landscape in a biological and social context. Additionally, this plan identifies a vision, goals, objectives and actions in order to allow government and the public to better assess the effectiveness of the annual plans. Public engagement as a component of this five-year plan ensures moose management on the Island of Newfoundland considers public interest in the resource.

The plan identifies three goals established to meet the requirements of effective moose management. Each goal identifies the major objectives contained within each and the necessary actions to achieve them. The actions provide the framework for how the department intends to implement the plan over the next five years.

Public Consultation

To provide the public with an opportunity to participate in and guide the development of this plan, in 2012 the Department of Environment and Conservation, in partnership with the Office of Public Engagement, initiated public consultations, which included public sessions, an online survey, as well as the opportunity for the public to provide written and online submissions. Sessions were held at eight locations throughout the province.

These sessions allowed regionally-based engagement sessions to discuss specific issues related to future moose management strategies and priorities at both regional and provincial scales. An online questionnaire was also available to the public to provide their opinions on the value of moose and moose management on a larger scale. In addition to the questionnaire, the public was able to provide comments via e-mail or written submission on any moose management issue that they deemed to be important. This process enabled wildlife managers to exchange information with the public and permitted the public to provide their views to wildlife managers.



Inter-Departmental Cooperation

The Department of Environment and Conservation has the mandate to manage provincial wildlife species and habitat, including insular Newfoundland's moose populations. Responsibilities for moose management include setting annual hunting quotas and seasons,

establishing management area boundaries, conducting research and surveys, educating and licensing hunters and the general public, and establishing policies, legislation and administration requirements required to support a safe, responsible, and sustainable moose harvest.

To fulfill the mandate of the Department of Environment and Conservation and to implement province-wide program delivery on various aspects of moose management, the Department seeks the support of other government departments who have responsibility with aspects of program delivery. They include:

1. The Department of Natural Resources: The Department of Natural Resources is responsible for response to moose conflict reports (problem farm moose, moose in communities, moose vehicle collisions (MVCs); assisting with monitoring moose disease and health; assisting with research and surveys; answering questions from the public about quotas, seasons, and area boundaries; and issuing replacement moose licenses in certain situations.
2. The Department of Justice: The Fish and Wildlife Enforcement Division is responsible for the enforcement of fish and wildlife laws and regulations, including those related to moose.
3. The Department of Business, Tourism, Culture and Rural Development: This department is responsible for the distribution of non-resident moose hunting licenses and manages activities associated with the outfitting industry.
4. The Department of Transportation and Works: The Department of Transportation and Works is responsible for roadways and has engaged in the following activities related to MVCs: tracking the number of MVCs; testing methods to reduce the number and severity of MVCs (i.e. roadside brush clearing, fencing, wildlife detection systems and signage), and implementing a MVC public awareness campaign.

Implementing an effective moose management plan into the future will require the collaborative approach and input of all these departments.

VISION

To improve the sustainability of the moose population on the Island that reflects the social and ecological values of the province while seeking to maximize the social, cultural and economic benefits of a viable moose resource.

GOAL 1.0

Ensure the long-term sustainability and health of moose populations and habitat across the island.

OBJECTIVE 1.1

Establish population target densities that reflect regional social expectations for moose management.

Historically, moose in Newfoundland have been managed to maximize hunting opportunity and maintain a high level of hunter success. Newfoundland has abundant, good quality moose habitat and, in the absence of wolves as predators and deer as competitors, moose populations have been able to reach densities higher than many other jurisdictions.

As a result, the number of annual moose licenses available (15,000 to 30,000 since 1990) and hunter success (> 65 per cent) is high.

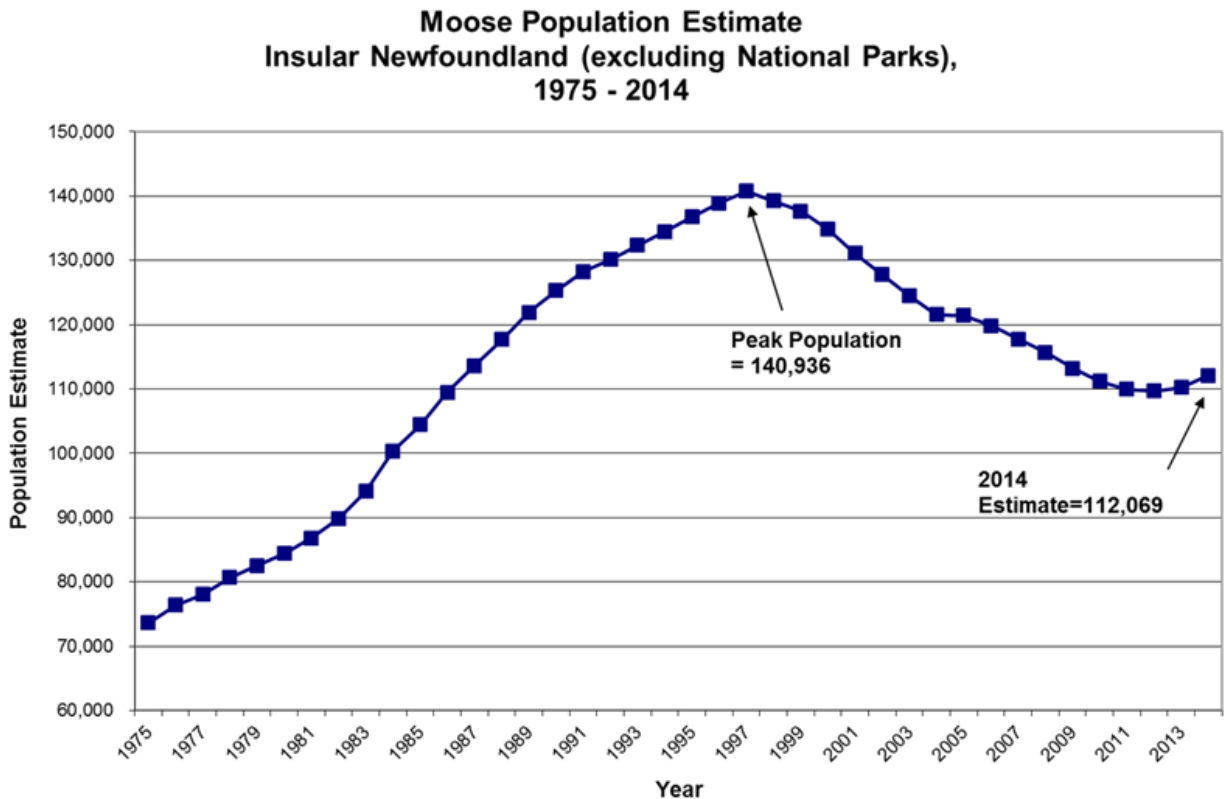
This management approach has been challenged in recent years to be more inclusive of other social factors, including MVCs, and to recognize and address changes to forest structure and composition, particularly where high moose densities exist. Results from the facilitated public engagement sessions, online surveys, and e-mail input suggested the people surveyed were generally supportive of the current Newfoundland moose management program and wanted an abundant moose population with ample hunting opportunity.

However, there were regional differences in the willingness to trade-off hunting opportunity and hunter success in an effort to address other conflict related issues. For example, people who participated in surveys from the Avalon Peninsula indicated a willingness to accept fewer moose, more licenses, and potentially a lower hunter success rate as a trade-off to address moose vehicle collisions and other conflicts with moose. People on the West Coast and Northern Peninsula felt more strongly that abundant moose and successful hunting opportunities remain the main goal for their region.

Adapting regional social expectations into the annual management planning process and in a longer-term plan for moose presents a new challenge for the department. In response to the public input, the Wildlife Division will revise target densities for specific MMAs to reflect public priorities and address regional expectations for moose management. Implementing and evaluating the impacts of this plan will occur over the next five years.

ACTIONS

- i. Establish moose population target densities that reflect regional priorities as described in public consultations.
- ii. Develop mechanisms to monitor and assess the acceptance and success of the regional management approach to address public expectations and social issues associated with moose management.
- iii. Communicate regional moose management approaches, goals, and target population densities to hunters, outfitters, interest groups, and the general public.



OBJECTIVE 1.2

Implement a revised regional approach and monitor its effects on harvest outcomes and specific MMA moose densities.

Adjusting moose densities to reflect regional social priorities will be conducted over the duration of this plan. Historically, and based on research conducted on the Island, management has focused on stabilizing target densities for moose at approximately two moose/km² of available habitat. This density estimate was based on an assessment of preferred moose habitat and an understanding of the percentage of forest and scrub available in each moose management area.

Establishing population levels derived from this process allowed managers to adjust quotas to meet specific management area objectives in an effort to balance the moose population with the amount of available habitat. Integrating social considerations into moose management may result in some regions and or management areas of the Island having target moose population densities lower than the habitat could support. By integrating social considerations, moose populations may be managed at a sustainable level but at densities lower than those regions where maximizing the moose resource is a priority.

The integration of biological considerations into future moose management will continue to rely heavily on accurate and timely data on moose population size, reproductive rates, sex ratios, harvest levels, and disease occurrence. This information is used to produce population models to project changes in population size resulting from biological, environmental, and management regime changes. Enhancing research and monitoring programs for moose was a common theme from the public consultation process. Good science, enhanced research, and more surveys were noted during public consultations as issues related to moose and habitat management. Science-based decision making was widely recognized regardless of whether participants wanted to see more or fewer moose. The department also recognizes the important role of the social sciences in the management decision making process and will consider the values, attitudes and beliefs of residents as an integral part of management planning.

On the Island, moose have no other ungulate competing for forage, and the resulting food availability has led to higher than normal moose densities, compared to other jurisdictions. A regional approach to moose management will continue to require integration of moose biology and ecology to ensure moose populations remain sustainable over the long term. Over-harvest as a result of too much hunting pressure is a concern, but moose populations that have decreased from hunting can rebound very quickly if habitat is available and food is abundant.

ACTIONS

- i. Maintain, monitor, and report on the status and trends in moose populations per MMA.
- ii. Adjust quota allocations to reflect revised regional approach.
- iii. Establish a rotational moose population survey schedule and monitoring program.
- iv. Collect harvest related data to monitor population trends.

OBJECTIVE 1.3

Manage moose populations to minimize the effects of over-browsing.

Good moose habitat is based on the amount of available forest and scrub. Although Newfoundland has an abundance of good moose habitat, too many animals in one area can result in depletion of the plant species on which moose feed. Moose are large mammals (350-550kg) and can eat 30kg of food (leaves, twigs, herbs and aquatic plants) in a day.

Over the long-term, plant communities change with decreases in preferred species such as balsam fir, birch and poplar and increases in spruce and grasses. When this happens, moose productivity (number of calves being born) decreases, along with a decline in moose body condition. The moose population may decline, and it can take years for the habitat and populations to recover.

Habitat changes can also affect an area's biodiversity. Herbaceous and woody plant species can disappear not only as a result of being consumed by moose, but also due to changes in local environmental conditions (wind, humidity, and sunlight) that occur when moose over-browse an area. When these changes occur in forest structure, the effects may be observed decades later.

Hunting is an effective tool for regulating moose populations in an area, but hunters must first be able to access the area. Outfitters can play an important role in managing remote populations by bringing non-resident hunters into these areas. There are several advantages to having outfitters in remote areas. Conflict with resident hunters is minimized, and non-resident hunters enjoy high-value wilderness experiences, as well as good success rates as a result of high moose populations.



Hunting keeps moose populations in balance with their environment and attempts to ensure moose don't negatively alter the ecosystem.

Managing moose populations for the future requires improved understanding of moose habitat in relation to the amount of available forest and scrub, the impact moose have on their habitats, and the population level that can be supported in an area. This will improve the ability to establish appropriate target densities for moose to ensure ecosystem and biodiversity values are reflected in future moose management strategies.

Once population targets are established, the main mechanism to ensure that the target densities are met is through hunting and monitoring. While resident hunting is effective in accessible areas, non-resident hunting can assist with attaining moose population targets in less accessible areas.

Forestry practices during the last 100 years have provided the Island with prime habitats in the form of early forest succession stages. Accordingly, the carrying capacity or the maximum number of moose that the habitat can support on the Island has been relatively high. Given the importance of forest harvesting on the creation of moose habitat, it is important to monitor changing habitats in consultation with relevant partners in the forest industry to ensure appropriate management strategies that reflect the diversity of values are considered.



Although the province has an abundance of good moose habitat, too many animals in one area can result in depletion of the plant species on which moose feed.

ACTIONS

- i. Enhance work with academic institutions and other partners in order to better understand moose-habitat relationships on the island of Newfoundland.
- ii. Improve our existing ability to better define moose habitat in relation to forest and scrub using advances in forest inventory, remote sensing, Geographic Information Systems, and other scientific methods.
- iii. Assess regional moose management population targets, in light of improved habitat information, to determine if adjustments are required to ensure long-term sustainability.
- iv. Assess the current and potential role of the outfitting industry to assist with moose management in remote areas, and the use of non-resident hunting to help meet moose population targets.
- v. Evaluate management options to promote hunter accessibility.

OBJECTIVE 1.4

Monitor the moose population and other wildlife species to manage the risk of disease.

Compared to other members of the deer family, such as elk and white-tailed deer, serious health risks between moose and humans or other wildlife are relatively limited. However, as environmental conditions change, so may the impact of parasites and the occurrence of existing and new diseases. Due to the cost and difficulty of disease and parasite management in the wild, maintaining up-to-date knowledge of health risks associated with moose populations, and developing a monitoring program to check for disease occurrence is the preferred approach in response to managing risks.



Monitoring the health of the moose population and maintaining up-to-date knowledge of health risks associated with moose populations are an important component of moose management.

ACTIONS

- i. Develop and implement monitoring to detect the presence of disease and parasites, including host species and transmission pathways.
- ii. Engage the hunting community to report incidences of potentially diseased moose.
- iii. Develop policies to mitigate against potential transmission of disease and parasites into wild moose populations.

OBJECTIVE 1.5

Engage stakeholders in the decision making process for sustainable moose populations.

The views, opinions and experiences of stakeholders are an essential component in the successful management of moose populations. The department will ensure that best efforts are taken to gather the views and opinions of stakeholders on moose management within the Island. The department will also make best efforts to ensure that information gathered as a result of actions in this plan are conveyed to the public in a timely and effective fashion.

ACTIONS

- i. Develop effective communication and outreach programs designed both to disseminate information and to gather the views and opinions of stakeholders.
- ii. Monitor public satisfaction towards the revised regional approach/priorities.

GOAL 2.0

Maximize the benefits from the moose resource.

OBJECTIVE 2.1

To ensure reasonable access and benefit.

Effective moose management on the Island is dependent on the active participation of the hunting community to continue the moose hunting tradition. In the absence of predation, hunting is the primary mechanism that assists in regulating populations. Hunters remove approximately 25,000 moose annually and their continued participation is critical to successful long-term moose management.

The benefits derived from the annual moose harvest provide approximately eight million pounds of wild meat to residents. Moose meat is a dietary staple for many of our residents and supports a significant recreational activity. The annual moose hunt is distributed amongst resident, as well as non-resident hunters via the outfitting industry, and, collectively, this hunt contributes significant economic benefits to the provincial economy. The benefits derived from viewing moose were also identified in many of the public engagement sessions; however, the value of such activities is difficult to estimate.

The competing values associated with moose management suggests that management must remain adaptive to the needs of residents to ensure that long term participation and benefits from the moose resource continue to be realized. Management must seek to ensure that the concerns and needs of the hunting and non-hunting public are represented in its moose management programs. Regulations governing moose hunting, its policies, distribution of licenses, quota allocations, harvest types, etc. must be implemented in a manner that promotes the benefits of the moose resource while ensuring that all interests are adequately represented.



The benefits derived from the annual moose harvest provide approximately eight million pounds of wild meat to residents.

ACTIONS

- i. Ensure that the allocation process considers the interests of all resource users.
- ii. Monitor and evaluate license allocation practices.
- iii. Review hunting regulations and licensing distribution mechanisms.

OBJECTIVE 2.2

To improve hunter education and compliance with the moose harvest management system.

Hunting and trapping activities are essential components of wildlife management. Hunters are considered to be the most economically feasible means to control and manage moose populations. It is crucial that every hunter is trained to a basic standard of care to ensure harvest of big game is completed in a safe and responsible manner. Provincial residents are required to complete the Firearm Safety/Hunter Education Course, which is a two part program encompassing the Canadian Firearm Safety Course and the Hunter Education Course. Both parts are mandatory training requirements for new hunters applying in the annual resident big game licence draw. Ensuring that provincial hunter education programs are accessible and responsive to critical issues involving moose hunter behavior and best practices is important towards long-term moose harvest management planning and objectives.

Appreciation and tolerance of wildlife and traditional, subsistence activities involving hunting and trapping may also become less important as people move away from rural to urban centers. In order to be effective, Island-wide moose management requires that hunters continue to participate and that the general public is well-informed and supportive of the goals established to ensure that hunting continues as an effective wildlife management tool.

ACTIONS

- i. Enhance mechanisms to monitor recruitment and retention of hunters, and evaluate training programs that support future participation in safe and responsible hunting.
- ii. Enhance public information and hunter education/information initiatives.

GOAL 3.0

Mitigate Against Human-Moose Conflict

OBJECTIVE 3.1

Evaluate moose density, behavior, and management options in relation to roads.

On average, there are approximately 500-600 MVCs reported annually within the province, with five to 10 serious injuries per year and an average of one human fatality. Most collisions occur from May to October, between dusk and dawn.

In Newfoundland, research indicates most of these accidents occur on dry roads and during clear nights. Currently, the relationship between the density of moose in an area and the collision rate is not well understood, nor is our understanding of the habitat use or behavior of moose around roadways. Many factors, including traffic volume, human population density, vehicle speed, and vehicle miles traveled may affect the rate of MVCs.

The Wildlife Division, in consultation with the Department of Transportation and Works, is investigating moose management actions that may help to mitigate the frequency and severity of MVCs. Improving the understanding of moose behavior and habitat use in relation to roads can provide additional insight into ways to mitigate for MVCs.

Through the establishment of annual harvest quotas, the Wildlife Division is responsible for both the active removal of moose from an area and the research associated with understanding moose habitat use and behavior. Removal of moose is accomplished through licensed hunters via the annual harvest with the additional provision of permits to allow for removal of “nuisance” moose. The broad scale application of targeted moose removal along provincial highways may be explored in an experimental manner to determine its feasibility towards addressing specific moose related issues. However, the role of roadside habitats, selection by moose to higher quality vegetation and impacts that targeted moose removal may have on highway safety will require evaluation. The nature and scale of MVC’s lends itself to removal techniques based on a regional approach rather than to targeted locations such as site specific issues occurring on agricultural lands.



Many factors, including traffic volume, human population density, vehicle speed, and vehicle miles travelled may affect the rate of Moose Vehicle Collisions.

ACTIONS

- i. Assess habitat characteristics measured against known rates of MVCs.
- ii. Assess the contribution of moose density to the rate of MVCs.
- iii. Assess and evaluate licensing and management options for targeted moose removal from specific high-risk MVC areas.

OBJECTIVE 3.2

Continue to research, monitor and evaluate moose - vehicle collision mitigation initiatives.

In all regions of the province, residents participating in public consultations identified MVCs as a significant concern. Government remains committed to evaluating potential measures to mitigate the rate and severity of MVCs. There are two approaches to mitigation in relation to moose: passive and active. Passive approaches include techniques such as roadside fencing, reduced speed limits, warning lights, and roadside brush clearing. Active approaches focus primarily on removal of moose.

While most participants were willing to entertain options to actively remove moose from roadsides, they were unwilling to consider the complete removal of a viable moose population as a solution to the problem. The strongest public support favoured a more thorough evaluation of options for mitigating MVCs, while maintaining a healthy moose population and good hunting opportunities.

The Department of Transportation and Works (TW) has implemented and evaluated passive mechanisms being used in association with roadways, including break-beam technology wildlife detection systems and wildlife fencing. The evaluation determined that the use of break-beam technology is not reliable in the Newfoundland and Labrador's climate and terrain and therefore should not be continued. With regard to wildlife fencing, results indicate that more data collection is required before we can definitively determine its effectiveness in mitigating moose vehicle collisions in Newfoundland and Labrador.

In 2012, TW replaced its SAS accident system with a new Collision Data Management System. Unlike the previous system which could only locate accidents by road segments, the new technology uses a Global Positioning System technology to determine the exact location of all recorded MVCs.

ACTIONS

- i. Assess any proposed MVC mitigation options in relation to moose habitat use and moose density.
- ii. Continue to collect data to support the installation of wildlife fencing as a mitigation option.
- iii. Monitor and evaluate the effectiveness of new forms of technology aimed at reducing MVCs such as wildlife detection systems utilizing radar technology.
- iv. Continue with existing mitigation efforts such as brush clearing, herbicide treatment and public awareness.
- v. Incorporate the results of new research on MVC mitigation initiatives, including variables such as driver behavior, traffic volume, highway design and maintenance, and public awareness and education campaigns into existing and future moose management programs.

OBJECTIVE 3.3

Minimize land-use conflicts associated with moose.

Moose feed on trees, shrubs and other plants, with particular emphasis on balsam fir, birch, and crop plants, such as cabbage and turnip. Moose interactions with agricultural activities occur on crop and Christmas tree farms, where high-quality, easily accessible food exists. Conflicts can also arise when moose enter cities and towns, causing disruptions to traffic and public safety.

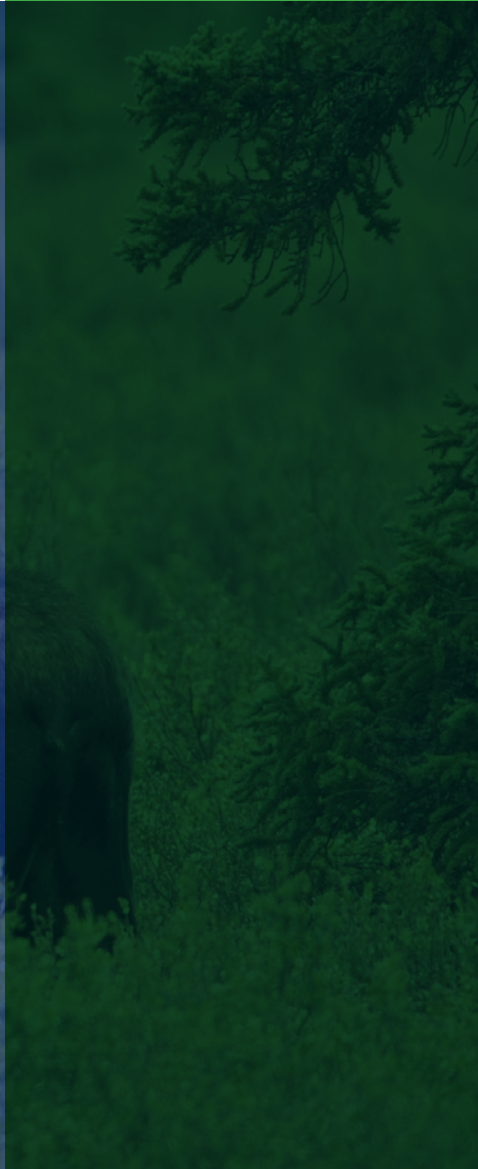
The Wildlife Division addresses incidences related to agricultural-based conflicts whereby farmers contact their local Department of Natural Resources office to have a licenced hunter dispatch the animal. In other instances, Conservation Officers from the Department of Natural Resources decide the appropriate action to address specific issues related to nuisance animals.

ACTIONS

- i. Review and revise existing policies on “nuisance” moose removal to ensure they are applicable to current agricultural practices and moose conflict within communities.
- ii. Continue to collaborate with other departments to ensure an adequate and consistent application of policies established for nuisance moose.

IMPLEMENTATION

The implementation of the objectives and actions outlined in the Plan will require ongoing analysis and discussion related to the identification of key priorities and resource requirements. The Department of Environment and Conservation and the Department of Transportation and Works will undertake discussion on implementation and will complete consultation with both government and non-government stakeholders as appropriate. It is acknowledged that specific actions will be required to be delivered at different points in time over the life of the Plan. In addition, some actions will continue over variable periods and may not be required over the entire five year lifespan of the Plan.



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