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A Report to the Joint Standing Committee on Inland Fisheries & Wildlife



L.D. 2288 -- Resolve, To Create a Deer Predation Working Group

The working group's findings, recommendations, and
recommended legislation

Submitted by:
Roland D. Martin, Commissioner
January, 2009

INTRODUCTION



Many people, residents and non-residents alike, are passionate about Maine's white-tailed deer. Some are hunters who enjoy deer hunting; others enjoy watching deer graze in a chopping, or are simply surprised by the doe and fawn that venture across the family's backyard. Maine deer are widely loved and appreciated by the public, and so, provoke strong feelings, opinions, and debates. There is no doubt that deer hunting and deer watching are greatly enjoyed in Maine -- and both are important contributors to the state's economy and to the

wildlife management programs of the Maine Department of Inland Fisheries & Wildlife [MDIFW].

MDIFW has the responsibility of managing Maine's deer population to ensure a healthy, secure population that provides both viewing and hunting opportunities, by balancing biological, social, and economic considerations.

Deer populations in northern and eastern Maine are very low; in many areas, the deer population is less than 5 deer/square mile. This is compared with deer densities of between 15-20 deer/ square mile in central and southern Maine. Such population densities are below the Department's long-term population goals for deer in northern and eastern Maine [Appendix 1E]; they are also greatly below the desires and expectations of resident and non-resident deer hunters, guides and outfitters, business owners located in rural Maine, and those who enjoy watching deer. The public is frustrated by low deer numbers, and it is demanding an upturn in the population.

White-tails are near the northern limit of their range in Maine. Deer are not well adapted to foraging or eluding predators in deep snow, non-supporting crusts, and glare ice; thus, their numbers rise and fall as a result of winter severity.

An important strategy deer utilize to survive winters is migration to deer wintering areas (DWAs). Deer wintering areas are essential to the survival of deer in northern and eastern Maine and allow deer to seek relief from cold, wind, and deep snow. Lower snow depths allow deer to create and maintain a trail network that enhance both their energy conservation and their ability to avoid predation. In these regions of Maine, deer utilize softwood stands composed primarily of fir, spruce, cedar or hemlock that possess high crown closures. Ideally, stands which provide shelter would be interconnected and highly interspersed with forage-producing types. Such an arrangement enables deer to move about freely in shelter stands while providing access to nearby forage supplies. Forest stand size, height, crown closure,



species composition (coniferous vs. deciduous trees), and uniformity of cover all have a marked impact on the quality of DWAs.

Deer use wintering areas for approximately 3 - 5 months in the winter when snow depths exceed 12 inches. Deer movements become restricted when snow depths are \geq 18 inches.

Factors that contribute to the high mortality rates associated with winter severity include the diminished number and quality of many deer wintering areas, fragmentation of the forest landscape that may interfere with deer movement to traditional DWAs, predator and alternate prey levels, and browse availability near DWAs. Mortality factors at other times of the year influence how quickly deer can recover from a severe winter. These include predation on fawns by black bear, coyotes, and bobcat; illegal hunting; doe harvest rates during legal hunting; and food quality.



Low deer populations in northern and eastern Maine are problems that have been intensifying for more than fifteen years. In 1993 the Department convened a committee to review options that would result in an increase in the Downeast deer population [Appendix 3H]. Low deer numbers were also topics considered in 2000 by the Department's Big Game Public Working Group [Appendices 1A-1G] and in 2007 by the Northern and Eastern Maine Deer Task Force [Appendix 3L].

BACKGROUND



Deer Management Planning: In 1999, the Department convened a Big Game Public Working Group to develop goals and objectives that would guide deer management [as well as the management of moose, bear, and coyote] for the period 2000 – 2015. The Big Game Working Group was a stakeholder group having diverse interests in deer. The group considered deer management issues for several months and recommended a series of deer management goals and objectives that covered the entire

state, including northern and eastern Maine [Appendices 1E-1G].

Prior to convening the working group, the Department prepared the *Deer Assessment*, an exhaustive review and analysis of all that is known about Maine deer; this assessment outlined the history of deer management in Maine and the current status of the population, habitat, and biological knowledge [Appendix 1B]. Once convened, the working group used the *Deer Assessment* to guide its development of deer management goals and objectives – the goals are broad statements of management direction, but the objectives establish timelines and are specific and measurable. The working group developed goals and objectives within the following broad sideboards: deer may not be put in jeopardy of extirpation, and they may not be managed in a manner that degrades habitat. Based on the deer management goals and objectives established by the working group, the Department prepared the *Deer Management System*, which outlines how it will determine if it is meeting management objectives and what management actions it will take if the objectives are not being met.

The Department followed an identical species-planning process for the eastern coyote and for the black bear.

Northern and Eastern Maine Deer Task Force: In response to the public’s intense interest and concern for the condition and future of the deer herd in eastern and northern Maine, Roland D. Martin, Commissioner, Department of Inland Fisheries & Wildlife, established the Northern and Eastern Maine Deer Task Force in April, 2007. The Task Force consisted of 11 members:

Matt Libby, Chair	Maine Professional Guides Association
Gene Dumont, Co-chair	MDIFW, Wildlife Management Section Supervisor
Tom Doak	Small Woodland Owners’ Association of Maine
Don Dudley	Maine Trapper’s Association
Rich Hoppe	MDIFW, Regional Biologist, Ashland
Lee Kantar	MDIFW, Deer and Moose Biologist
Gerry Lavigne	Sportsman’s Alliance of Maine
Tom Schaeffer	MDIFW, Regional Biologist, Jonesboro
Brian Smith	Maine Bowhunters Association
Sally Stockwell	Maine Audubon Society
Pat Strauch	Maine Forest Products Council

The Commissioner charged the group to: 1] characterize the status and condition of the deer population in northern and eastern Maine; 2] review ways to enhance deer wintering habitat in northern and eastern Maine; 3] review coyote management policies; and 4] submit “workable” recommendations to him for his consideration.

Additionally, legislators in the first session of the 123rd Legislature were considering the public frustration with low deer numbers and public concerns about coyote predation on deer. The enactment of LD 823 ‘Resolve, To Create an Effective Deer Habitat Enhancement and Coyote Control Program’ resolved that the Commissioner of Inland Fisheries & Wildlife establish a working group to review existing programs and efforts related to creating, enhancing and maintaining critical deer habitats in the State and reducing predation of deer by coyotes. The resolve further directed the working group to look for ways to improve and increase wintering habitat for deer, increase the survivorship of deer on a year-round basis, and establish methods of controlling coyote populations and set goals to manage the coyote populations [Appendices 2A and 2B].

LD 823 occurred after Commissioner Martin had established the Northern and Eastern Maine Deer Task Force; however, the Commissioner's Task Force and its members became the working group identified in LD 823.

The Northern and Eastern Maine Deer Task Force met eight times over the course of the spring, summer, and fall 2007, investing more than 30 hours in discussing the many factors likely contributing to low deer numbers and developing a series of recommended strategies to rebuild deer populations. In January 2008, MDIFW staff presented a final report to the Joint Standing Committee on Inland Fisheries and Wildlife constituting the Task Force's findings, recommendations, and proposed legislation. A copy of the entire report is available on our website at http://mainegov-images.informe.org/ifw/wildlife/surveys_reports/pdfs/ne_deerreport.pdf.



CREATION OF THE DEER PREDATION WORKING GROUP

As a result of recommendations of the Northern and Eastern Maine Deer Task Force, the 123rd Legislature developed LD 2288, 'Resolve, To Create a Deer Predation Working Group.' (Appendix 2C)

Sec. 1 Deer predation working group. Resolved: That the Commissioner of Inland Fisheries and Wildlife shall establish a deer predation working group to review and to recommend necessary revisions to the Department of Inland Fisheries and Wildlife's predation control policy. The 8-member working group must include representatives from the Department of Inland Fisheries and Wildlife, the University of Maine System, an organization that represents the needs of Maine's forest products community, an organization that represents trappers, an organization that represents professional guides, an environmental organization, an organization that represents sportsmen and an organization that represents small woodlot owners in the State; and be it further

Sec. 2 Duties. Resolved: That the working group shall consider:

1. Methods of coyote control;
2. Tools and devices to be employed in predation control;
3. The protocol used by the Department of Inland Fisheries and Wildlife to determine when and where to deploy animal damage control agents;
4. The need and consequences of reducing the bear population in northern and eastern Maine to allow the deer population to recover; and
5. The appropriate protocol for accomplishing bear reductions, if any, as determined under subsection 4.

The policy and protocols developed by the working group must adequately consider and minimize impacts to nontarget species, especially threatened and endangered species; and be it further

Sec. 3 Report. Resolved: That the Commissioner of Inland Fisheries and Wildlife shall report the working group's findings and recommendations and any recommended legislation to the joint standing committee of the Legislature having jurisdiction over inland fisheries and wildlife matters no later than January 5, 2009. That joint standing committee may submit legislation related to the report to the First Regular Session of the 124th Legislature.

House Amendment A to LD 2288 amended the 8-member working group to include a 9th member representing a statewide organization that represents farming.

The Deer Predation Working Group consisted of 8 members:

Mike Dann	Small Woodland Owners Association of Maine
Doug Denico	Maine Forest Products Council
Wally Jakubas	IF&W, Mammal Group Leader
Dana Johnson, Sr.	Maine Trappers Association
Gerry Lavigne	Sportsman's Alliance of Maine
Jon Olson	Maine Farm Bureau
Robert "Bos" Savage	Maine Audubon
Skip Trask	Maine Professional Guides Association

The University of Maine was invited to participate but declined citing a planned sabbatical, time constraints, and the lack of scientific evidence supporting widespread coyote control.

With the unanimous support of the Working Group, Sandy Ritchie, Habitat Conservation and Special Projects Biologist, Inland Fisheries & Wildlife, facilitated Working Group meetings and Lee Kantar, Deer and Moose Biologist, Inland Fisheries & Wildlife, and John DePue, Furbearer Biologist, Inland Fisheries and Wildlife, provided technical support to the group. In addition to the above, Gordon Mott and Geri Vistein from the public attended meetings. Working Group members agreed that members of the public could participate in meetings as long as progress was not slowed. A summary of each task force meeting and a list of those who attended can be found in Appendices 4-8.

The report that follows constitutes the working group's findings and recommendations.

SUMMARY OF DEER PREDATION WORKING GROUP MEETINGS

The working group met five times over the course of the summer and fall of 2008, investing more than 20 hours in discussing predation of deer by coyotes and black bear and developing a series of recommended strategies to address predation and reduce predation impacts on deer survival and recruitment.

Prior to the first meeting the Department distributed a number of background materials for the Working Group to review. These were not discussed in any great detail; rather they were provided as background and reference material [Appendix 3].

- *Eastern Coyote Assessment – 1999* prepared by Walter Jakubas, June 1999.
- *Eastern Coyote Management Issues and Concerns* raised by the 1999 Big Game Working Group.
- *Eastern Coyote Management Goals and Objectives 200-2015* developed by the 1999 Big Game Working Group and adopted by the MDIFW Commissioner and Fish and Wildlife Advisory Council in February 2001.
- *Feasibility Statements for the Eastern Coyote Goals and Objectives* prepared by Walter Jakubas, July 2001.
- *Problems and Strategies for Eastern Coyote Management in Maine* prepared by Walter Jakubas, July 2001.
- Report to the 117th Maine Legislature Pursuant to LD 793 *A Study of Eastern Coyotes and Their Impact on White-tailed Deer in Maine* prepared by Gerald Lavigne, December 1995.
- *Black Bear Management Goals and Objectives 200-2015* developed by the 1999 Big Game Working Group and adopted by the MDIFW Commissioner and Fish and Wildlife Advisory Council in February 2001.
- *1993 Downeast Deer Committee Report*
- MDIFW's *Administrative Policy Regarding Nuisance Wildlife*.
- MDIFW's *Administrative Policy Regarding Coyote Snaring*.
- Summary of Northern and Eastern Maine Deer Task Force Meeting #2 at which coyote predation on deer was discussed.
- Final recommendations from the Northern and Eastern Maine Deer Task Force.

To fully appreciate and understand the working group's recommended strategies, a brief overview of each meeting is presented below [see also Appendices 4-8].



Meeting #1 – June 26, 2008

1. **Background and Charge** - Sandy Ritchie provided a brief background on the history of the Deer Predation Working Group and indicated its charge was to consider: methods of coyote control, tools and devices to be employed in predation control, the protocol used by the Department of Inland Fisheries and Wildlife to determine when and where to deploy animal damage control agents, the need and consequences of reducing the bear population in northern and eastern Maine to allow the deer population to recover, and the appropriate protocol for accomplishing bear reductions, if any. Additionally, the policy and protocols developed by the working group must adequately consider and minimize impacts to nontarget species, especially threatened and endangered species.
2. **Reviewed Consent Decree and Order** - As a result of a lawsuit by the Animal Protection Institute against the Maine Department of Inland Fisheries and Wildlife under the federal Endangered Species Act a Consent Decree and Order was filed on October 14, 2007 by the United States District Court for the District of Maine. The Consent Decree specified that by whatever regulatory means are necessary, including, if necessary, emergency rulemaking procedures, Commissioner Martin shall, prior to October 14, 2007 impose a number of restrictions on trapping activities conducted in the geographic area of Wildlife Management Districts (WMDs) 1, 2, 3, 4, 5, 6, 8, 9, 10, and 11. See Appendix 4B for the full text of the Consent Decree and Order.
3. **Scope of Work** - The Working Group discussed their scope of work. It was suggested the goal was to improve survival of white-tailed deer by reducing predation by coyotes and bear. Discussion ensued and several members expressed concerns about reducing the bear population because of the economic importance bear hunting and trapping provide to Maine's rural economy. For the sake of moving forward, the group acknowledged that bear preyed on deer, especially fawns in the spring, but this fact did not imply they would necessarily choose to recommend actions to control predation by bear.

There was general agreement among Working Group members to strive to develop recommendations on predation control that were reasonable, in terms of their impact on nontarget species, costs and availability of funds, biological effectiveness, and public acceptance.

4. Methods of Coyote Control - The remainder of the meeting was devoted to a brainstorming session to identify on flip charts all of the possible methods to control coyotes. Some methods were immediately eliminated from further discussion because they were considered non-selective and/or unacceptable to the public. For other methods, the group identified advantages and disadvantages additionally eliminating some methods while retaining others for further consideration. Coyote control methods identified below are presented in no particular order but for discussion purposes are summarized in 4 categories.

a. Methods that were immediately eliminated without any discussion as being nonselective and/or unacceptable to the public.

- Poisoning
- Introduction of wolves
- Aerially gunning (especially around large bodies of water)
- Hunting coyotes from snowsleds while under power
- Pit traps

b. Methods that were eliminated from further consideration because the disadvantages outweighed the advantages.

- **Bounties**

- Advantages

- high public participation

- Disadvantages

- cost prohibitive
 - laden with fraud
 - doesn't target the problem coyote
 - method of take is unregulated
 - generates a lot of controversy
 - bounties don't work as evidence from a long history in the U.S.

c. Methods still under consideration.

- **Foothold traps**

- Advantages

- nontargets can be released

- a lot of people know how to use them
- very effective (it is the most effective tool for catching coyotes nationally)
- may be more acceptable to the public than killing snares, (will require education and outreach efforts, use of Best Management Practices)
- footholds are the standard because of oversight (Best Management Practices, injury scores)

Disadvantages

- potential incidental take of lynx
- risk of frozen toes (lynx)
- requires a 24-hour tend, which could prove difficult in remote locations and may lower participation
- harder to keep operational in deep snows
- effort has to be concentrated and maintained to be effective
- use of this tool may not be effective to achieve the necessary reduction in coyotes to promote an increase in the deer population

- **Cable restraints** – currently prohibited by the Consent Decree

Advantages

- effective at catching coyotes in winter when other methods are not
- frozen toes(lynx) are avoided
- avoids excessive injury
- may be more acceptable to the public than killing snares
- nontargets, such as lynx, can be released with little injury

Disadvantages

- effort has to be concentrated and maintained to be effective
- use of this tool may not be effective to achieve the necessary reduction in coyotes to promote an increase in the deer population
- still can result in incidental take
- requires a 24-hour tend, which could prove difficult in remote locations and may lower participation
- requires a certain level of expertise and training
- costly to compensate agents for their efforts

- **Neck snares**

Advantages

- effective at killing coyotes
- selective
- doesn't require a 24-hour tend
- can be used in a very targeted way

Disadvantages

- requires expertise and training to use
 - effort has to be concentrated and maintained to be effective
 - live release of nontargets is diminished
 - less acceptable to the public
 - costly to compensate agents for their efforts
 - hunters using hounds have expressed concern for the safety of their dogs
- **Use of urine** (coyote, wolf, or cougar)

Advantages

- nonlethal
- public acceptance

Disadvantages

- temporary
- true efficacy is unknown
- cost prohibitive
- logistics to apply

d. Methods not discussed before the meeting adjourned.

- Denning
- Sterilization of alpha (dominate) coyote pairs
- Maintaining the alpha pair in the deer wintering area
- Removing the alpha pair
- Hunting (night hunting, hunting with dogs, calling, shooting over bait)
- Award programs

The minutes of the first meeting and all of the documents provided to the working group are found in Appendix 4.

Meeting #2 – July 30, 2008

The second meeting was devoted to a continued discussion of various methods to control coyote predation.

1. Trapping Devices and Techniques - Dana



Johnson, President of the Maine Trappers Association, presented an overview of a variety of coyote traps and other capture devices.

2. Methods of Coyote Control - The Working Group continued its discussion of the advantages and disadvantages of various coyote-control methods, seeking to refine a list of recommended methods.
 - **Denning** – in most instances denning involves killing the adult coyotes and then dispatching the pups in the den or leaving them to die.

Advantages

- removes the entire family group
- removes family groups in the spring when coyotes are preying heavily on deer fawns
- no incidental take

Disadvantages

- most use has occurred in western states – not much denning activity has occurred in northeastern forested areas
 - questions concerning efficacy because of coyote biology
 - low public acceptance?
 - timing of activity – conflicts with other spring activities (agents would need to be paid)
 - pelts are not prime (less incentive)
- **Sterilization of alpha coyote pairs**

Advantages

- reduces coyote recruitment – fewer pups present to be fed deer
- maintaining the alpha pair maintains the territory and excludes other coyotes
- publicly acceptable?

Disadvantages

- efficacy
- cost
- level of effort to administer
- how would it be accomplished – males/females?
- some would question why coyotes would be released after capture
- if the effort and cost were devoted to sterilization, we would need to limit the take of coyotes either recreationally or by directed control to avoid wasting funds
- closed seasons
- using chemicals in wildlife populations

Questions

- Is there an approved sterilization chemical for coyotes? Canids? What is the delivery system, technique, cost, efficacy, and advantages and disadvantages?
 - What is the impact of sterilization on “natural” coyote ecology, social structure, etc?
 - Would we need to sterilize all females – estrus in March?
 - Would neutered coyotes still kill deer in winters?
- **Maintaining the alpha coyote pair in the deer wintering area** – assumes the current scientific thinking that the alpha coyote pair exclude other coyotes

Advantages

- limits incidental take
- maintains “natural” predator/prey relationship
- low / no cost

Disadvantages

- reduces coyote hunting and trapping opportunity
 - difficult to determine efficacy
- **Removing the alpha coyote pair**

Advantages

- adults would not be feeding pups fawns
- removal of most effective hunters

Disadvantages

- breaks down territorial exclusion
 - concerns about the ability to identify the alpha pair
- **Hunting – General Activity** (night hunting, hunting with dogs, calling, general hunting, shooting over bait)

Advantages

- no incidental take
- low / no cost
- widely available activities to all hunters
- hound hunting is very effective in taking coyotes
- more acceptable to the public?
- provides economic opportunities – guiding, etc.
- perhaps more humane?

Disadvantages

- the night hunting season is too short / too limited and should be extended to September 1 (Warden Service may have concerns about extending the night hunting season on coyotes because of the potential for night hunting deer)
 - may not address the problem coyotes killing deer
 - difficult / inefficient to kill large numbers of coyotes
 - effort has to be concentrated and maintained to be effective
 - hunting may not be effective to achieve the necessary reduction in coyotes to promote an increase in the deer population
 - night hunting and hunting with dogs may not be acceptable to some landowners
 - concerns about coyote hunting in and around deer wintering areas
 - concerns about coyote hunting around built up areas / population centers
- **Hunting – Animal Damage Control (ADC) Activity** (night hunting, hunting with dogs, calling, shooting over bait)

Advantages

- focused / controlled / better to assess results
- no incidental take
- increased effectiveness of deployed ADC agents
- more acceptable to have professional / trained ADC agents conduct the work?

Disadvantages

- costs
 - effort has to be concentrated and maintained to be effective
 - hunting may not be effective to achieve the necessary reduction in coyotes to promote an increase in the deer population
 - limited number of people available to hunt with dogs (discussion about dogs in DWAs; snowmobile trails)
- **Privately sponsored award programs**

Advantages

- no cost to the state
- low / no incidental take
- promotes interest in coyote hunting / incentive to hunt coyotes
- may complement other control activities

Disadvantages

- not targeted to problem coyotes killing deer
- public acceptance?
- fraud / cheating to get an award
- long history of not being effective

The minutes of the second meeting and all of the documents provided to the working group are found in Appendix 5.

Meeting #3 – August 20, 2008

The third meeting was devoted to an update on sterilization of alpha coyote pairs raised at the prior meeting, discussion of bear predation on deer, and identification of bear control methods.



1. Sterilization of Coyote Alpha Pairs – Wally Jakubas, MDIFW Mammal Group Leader, provided an update to the coyote sterilization discussion that occurred at the last meeting.

Sterilizing the alpha pair would have two benefits: 1) when coyotes do not have to provision their pups they are less likely to prey on deer or other large prey, and 2) the alpha pair continues to maintain its territory (thus excluding transient coyotes) even after they are sterilized. All captured coyotes need to be surgically sterilized to ensure sterilization of the alpha pair. Such intensive, statewide sterilization of coyotes would not be practical and may only be useful in targeted areas.

Although this coyote control technique has proven effective with sheep depredation in seasonal experiments, its efficacy for year-round protection has not been tested. During the summer grazing season, coyote groups that were not sterilized killed six times as many sheep as sterilized coyote groups.

In western states, coyotes were captured using helicopters. The cost for capturing and surgically sterilizing a coyote was approximately \$560. This compares to \$185 to shoot a coyote from a fixed-winged aircraft or \$805 to trap a coyote.

When asked if there was a sterilant we could give coyotes that wouldn't require capturing them, Wally indicated that this has been investigated since the 1960s, and there were no sterilants being used at this time. The bottom line is that sterilization is not feasible at this time.

2. White-tailed Deer Populations in Maine: Past and Present - Lee Kantar presented a powerpoint program highlighting changes to Maine's deer population over time. A copy of his presentation is found in Appendix 6B.
3. Northern and Eastern Maine Deer Task Force Bear Predation Recommendation – the Deer Predation Working Group requested clarification of the Northern and Eastern Maine Deer Task Force's bear predation recommendation.

The Northern and Eastern Maine Deer Task Force's bear predation recommendation was *"for MDIFW to evaluate the need and consequences of reducing the bear population in northern and eastern Maine during the short-term strategy period (present day-2025) to allow the deer population to recover [reduced fawn predation] and consider accomplishing this by increasing the length of the bear season [requires agency rule-making], increasing the bear bag limit [requires legislation], reinstating the spring bear hunt [requires legislation] with a "cub law," or other strategies appropriate to achieve the desired population reduction. Any decision must be integrated with the work of a species planning work group being established by MDIFW later this year."*

4. Bear Predation on Deer – Wally Jakubas and Jennifer Vashon (via phone), MDIFW's Bear Biologist, led a discussion and responded to questions concerning bears as a predator of deer.

Wally indicated there is no question that throughout North America, bear is an important predator of ungulate neonates (less than 12 months of age). The degree of predation seems to vary across the landscape with bears accounting for 20% - 60% of fawn mortality. In all cases, bears are a significant factor in fawn mortality.

M.L. Wilton, Ontario Ministry of Natural Resources reports "There can be little doubt in anyone's mind after examining the literature that the black bear not only is highly capable of capturing and killing young cervids, but indeed has done this to such an extent in some areas as to constitute a major factor limiting cervid populations. Moreover black bear predation on young cervids appears to have been witnessed by a sufficient number of individuals to indicate that it occurs to a greater or lesser extent across the entire range of the black bear in North America."

Jennifer stated that if Maine were to implement methods to reduce the bear population to benefit deer we would be the first state to do so, and we would need to determine if the public would support this management action .

5. Methods of Bear Control - the remainder of the meeting was devoted to a brainstorming session to identify on flip charts methods to control bear predation.
 - Implement a spring bear season
 - Increase the length of the fall baiting and/or hound seasons
 - Increase the bag limit
 - Increase the length of the trapping season
 - Lower fees and/or waive permits to increase participation
 - Increase participation by eliminating the guide requirement for aliens
 - Increase marketing of bear hunting in Maine by MDIFW, Department of Tourism, others

The Working Group began to identify the advantages and disadvantages of each control method.

- **Spring Bear Season**

- Advantages

- reduces the number of bears before they would prey on fawns

- targeting males may achieve a deer objective without a major impact to the bear population

Disadvantages

- unacceptable to the public?
- uncertain whether the legislature would support it
- debate in the legislature could impact current seasons
- any reduction in the bear population will have a public expectation to determine effectiveness, which could prove very costly

Discussion of a spring bear season led to a broader discussion of the need and consequences of reducing the bear population (and in some respects coyote) in order to effect a change in deer numbers. It was agreed that the group needed to have a “need and consequences” discussion before proceeding further. With the allotted time for the meeting running out, MDIFW offered to run an analysis of winter mortality to determine how much we would need to increase adult doe survival (without increasing recruitment) to effect positive population growth. This would help frame a “need and consequences” discussion at the next meeting.

The minutes of the third meeting and all of the documents provided to the working group are found in Appendix 6.

Meeting #4 – October 9, 2008

This meeting was devoted to a discussion of an analysis of deer population growth and predation effects, which led to a broader discussion of a Deer Predator Control Study.

1. An Analysis of Deer Population Growth and Predation Effects – Lee Kantar, MDIFW Deer and Moose Biologist, presented a powerpoint program and led a discussion in an attempt to answer two questions:
 - a. In the absence of winter predation of deer by coyotes, how would the population respond?
 - b. If predator control can reduce deer mortality and foster growth, how long would it take the deer herd to grow?

A copy of Lee’s presentation is found in Appendix 7B.

2. Deer Predator Control Study – Lee Kantar’s presentation led to a lively debate among working group members concerning the merits of conducting a Deer Predator Control Study. By the end of the meeting nothing was resolved. At the Working Group’s request, MDIFW agreed to provide an analysis of the feasibility of a Deer Predator Control Study for discussion at the next meeting.

The minutes of the fourth meeting and all of the documents provided to the working group are found in Appendix 7.



Meeting #5 – December 18, 2008

At the fifth and final meeting, Wally Jakubas discussed the feasibility of conducting a Deer Predator Control Study [Appendices 8B and 8C]. The objective of a study would be to determine whether coyote control methods can be deployed in a manner that will increase deer numbers in areas of the state where the current deer population is below management objectives. To provide meaningful results, a study would need to answer several questions.

1. What method(s) will be used to control coyotes in the study?
 - What tools are available, effective, and acceptable to use for coyote control?
 - How much effort (personnel or contractor time) should be deployed?
 - Who will do it and at what price?
 - How much money can we spend to achieve coyote control on a given size area?
2. Where can the study be done to assure that the results will be applicable to other areas of the state?
3. How can we measure an increase in the deer population or deer densities?
 - Direct counts or surveys of the deer population
 - Changes in survival (e.g., year round survival of adults and/or the number of deer surviving from birth to reproductive age)
 - Change in an index that reflects the density of deer in an area (e.g., deer pellet counts, number of deer harvested)

Which of the above 3 methods is the most appropriate for this study?

4. What size area do we want to achieve coyote control on? Should it be focused on specific Deer Wintering Areas (DWAs), Wildlife Management Districts (WMDs), or regions?

5. How much would deer survival or the population have to increase to conclude that predation control was successful?
- Percent increase in survival rates?
 - Percent change in deer densities?

Wally concluded his analyses by discussing a number of issues associated with 3 potential study designs. At the close of the discussion, there was general agreement among Working Group members that a Deer Predator Control Study would be expensive and impractical under current budget restrictions, and we could not control enough variables to provide definitive cause and effect results. As such, the outcomes of a study would always be questioned.

Drawing from the information and discussion from the previous meetings and to serve as a springboard for developing recommendations, MDIFW developed a list of possible options for the Working Group to consider to arrive at common, recommended strategies to address coyote and bear predation of deer and reduce predation impacts on deer survival and recruitment [Appendix 8D].

The remainder of the meeting was devoted to a review of the strategies identified by MDIFW with an opportunity for Working Group members to suggest additional strategies. At the

conclusion of the meeting, the Working Group had assimilated the information from the previous meetings into a series of recommended strategies. It must be noted that although these recommended strategies seek to represent a consensus of the group wherever possible, in a couple of instances they represent the majority recommendation.

The minutes of the fifth meeting and all of the documents provided to the working group are found in Appendix 8.

Following the meeting, MDIFW developed a draft report outlining the deliberations and recommendations of the Deer Predation Working Group and forwarded the draft to the Working Group members for review and the opportunity to provide any additional comments or thoughts. The Department requested that it receive these by January 20, 2009.



WORKING GROUP RECOMMENDATIONS

Recommendations to the Joint Standing Committee on Inland Fisheries and Wildlife for Addressing Deer Predation by Eastern Coyotes and Black Bears

Developed by the Deer Predation Working Group
Winter 2009

Coyote Predation of White-tailed Deer

It was the consensus of Deer Predation Working Group members to make the following recommendations. Recommendation #3 was the group's primary recommendation, but members recognized that it will take a period of time (estimated at 2-3 years) to develop and administer if successful. To address coyote predation of deer in the interim they proposed Recommendations #1 and #2.

- 1. An Animal Damage Control Program that utilizes shooting coyotes over bait and hunting coyotes with dogs:**¹ This activity would be focused, controlled, and selective; it will not result in any incidental take of nontarget species; and it will not require an Incidental Take Permit (ITP) in areas with lynx. Though there was consensus in making this recommendation, there was not consensus that these methods would be effective in achieving the necessary reduction in coyotes to promote an increase in the deer population, or that funds to implement a program would be well spent.

Shooting coyotes over bait and hunting coyotes with dogs are not without challenges, including:

- Logistical impediments, especially in remote areas with deep snows.
- Potential for disturbance to deer in wintering areas.
- Any large scale coyote control effort would have to be maintained through time.
- It is unlikely that sufficient effort could be applied to reduce coyote predation on deer.
- There are a limited number of people available to hunt coyotes with dogs.
- It will be costly to implement, though there was not consensus among Working Group members as to how costly.² Costs could be lowered from private donations in

¹ The Working Group did not support controlling coyotes by denning (i.e., killing the adult coyotes and then dispatching the pups in the den or leaving them to die) because denning does not target specific concentrations of deer; it may also be unacceptable to the public.

² MDIFW estimated that to fully compensate ADC agents for their efforts, it would cost approximately \$38,000 to implement coyote control in one deer wintering area for three months. [Standard USDA cost for ADC work (personnel time, equipment and gas) is \$35/hr and likely would be more for this program (John Forbes, USDA, personal communication).] Some Working Group members took issue with the cost estimates suggesting the figures were too high.

support of coyote control efforts or with volunteer help ADC agents may be willing to provide, but it is uncertain whether we could get enough volunteers to maintain coyote control efforts in remote locations for 3 months in the winter.

The Working Group was unanimous that funds to implement an ADC program be new funds and not come from the Department's existing revenues.

A general outline of an ADC program is presented below.

Where ADC Activity Would Occur: Hunting coyotes with dogs and shooting coyotes over bait would occur in actively-used deer wintering areas (DWAs) within wildlife management districts where the deer population is below population objectives, and in DWAs where landowners are managing deer wintering habitat using DWA Best Management Practices (BMPs). ADC activity may occur in areas not meeting the above criteria only upon demonstrated need and at the discretion of the regional wildlife biologist.

Animal Damage Control Agents: Qualified persons must hold a valid hunting license and be proficient in the use of methods relevant to their activity. Once the district warden and regional wildlife biologist are satisfied with a person's competency and understanding of the program, that person can register as an ADC agent for the activities in which he/she is proficient. Additional activities can be added upon approval of MDIFW's Wildlife Management Section Supervisor.

ADC certification must be renewed every two years, during which time an agent must attend one regional training session and submit monthly ADC activity reports. Registered ADC agents are considered "Agents of the Commissioner" and perform ADC work under the direction of a Department official.

Deployment: Deployment is an explicit action by MDIFW, through the Regional Wildlife Biologist, that authorizes an ADC agent to operate in a given area to perform coyote control duties in areas meeting the above criteria.

Regional staff will participate in training programs and carry out deployment and certification procedures according to Department policy.

The Regional Wildlife Biologist will maintain a regional map depicting the location of all coyote control activity within his/her region.

Accountability: ADC agents are responsible for adhering to the provisions of the Department's ADC policy.

Reporting: All coyotes must be reported at least monthly on Department ADC reporting forms. Monthly reports must be received at the appropriate regional wildlife headquarters as follows: coyote control activities for the month of



December must be reported to the Department by 10 January; for January by 10 February; for February by 10 March; and for March by 10 April. An ADC agent will lose his/her certification for failure to submit complete and accurate reports as scheduled.

2. **Promote coyote hunting and trapping** – the Maine Department of Inland Fisheries and Wildlife will work with sportsmen’s groups, registered Maine Guides, and others to better promote coyote hunting and trapping.

3. **There is a body of research and experience indicating that cable restraints are the most appropriate tool to use in areas with lynx; therefore, the Working Group recommends that MDIFW implement an Animal Damage Control Program using cable restraints with a 24-hour tend requirement. This activity will require an Incidental Take Permit in lynx areas.**
 - An ITP for Department-directed Animal Damage Control activities using cable restraints would not be pursued until and unless the pending ITP for Maine’s trapping program is favorably resolved.
 - It would take a minimum of 18 months to write an ITP and undergo review/approval by the USFWS.
 - An ITP is costly to prepare (estimated at \$13,000 for staff time alone) and if approved would be costly to implement, though there was not consensus among Working Group members as to how costly (see footnote #2 on Page 20). Costs could be lowered from private donations in support of coyote control efforts or with volunteer help provided by willing ADC agents , but it is uncertain whether there would be enough volunteers to maintain coyote control pressure in remote locations for 3 months in the winter.

The Working Group was unanimous that funds to implement an ADC program be new funds and not come from the Department’s existing revenues.

There was consensus among Working Group members not to recommend a Deer Predator Control Study because it would be expensive and impractical under current budget restrictions, and we could not control enough variables to provide definitive cause and effect results. As such, the outcomes of a study would always be questioned. Many agreed, however, that if money and effort was no object, a study could provide a body of needed research.

A minority of Working Group members supported taking no action to control coyotes for several reasons: the lack of appropriate tools, effectiveness of coyote control methods, difficulties of late winter coyote control activity, uncertainty that sufficient effort could be applied to reduce coyote predation on deer, and cost to administer and implement a coyote control program. These members emphasized that the most important issues limiting deer population growth in northern and eastern Maine are the decline in the number of deer wintering areas, the diminished quality of many deer wintering areas, and fragmentation of the forest landscape that may interfere with deer movement to traditional DWAs. They contend that efforts to increase deer numbers should focus on improving the quality and quantity of deer wintering areas until there is greater evidence that predator control can be effective.

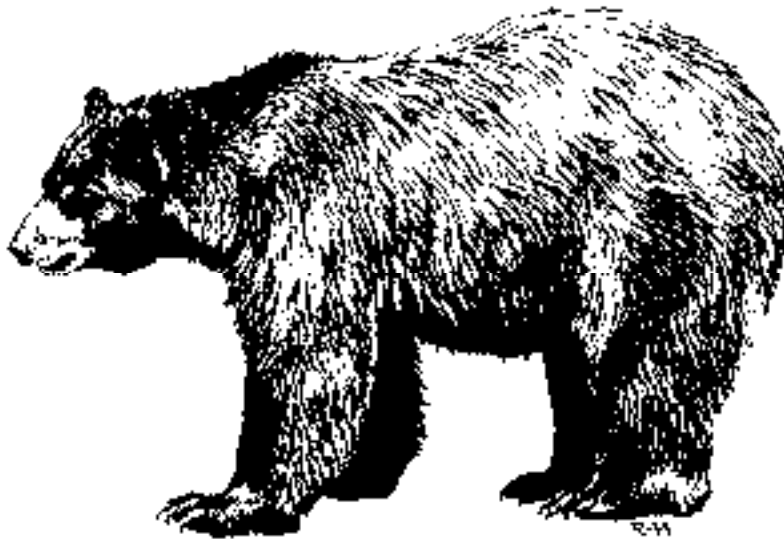
Bear Predation of White-tailed Deer

It was the consensus of Deer Predation Working Group members to recommend:

1. Taking no bear control action, because:³

- Bears are important to Maine's economy: A significant increase in the bear harvest and a greatly reduced bear population may undermine the economic contribution that bears provide to Maine's rural economy.
- Increasing the bear harvest by expanding current seasons, adding new seasons, and/or increasing bag limits may not be acceptable to the public, and debate could threaten Maine's current bear regulations, which could undermine the state's bear management program, hunting and trapping opportunity, and the economic contribution that bears provide to Maine's rural economy.
- Determining the effectiveness of bear population control would require the same level of study as for coyotes. Such a study 1) would be expensive and impractical under current budget restrictions, and 2) we could not control enough variables to provide definitive cause and effect results. As such, the outcomes of a study would always be questioned.

None of the recommendations of the Deer Predation Working Group will require any legislation or agency rulemaking.



³ One Working Group member suggested MDIFW work to achieve its current bear population objective to stabilize the population at no less than 1999 levels through annual hunting and trapping harvests. Since 1990, Maine's bear population has increased at least 28%. To achieve the current population objective may require innovative changes in harvest regulations to generate the increased harvest needed to reduce the population and may be in conflict with the consensus of the Working Group (Recommendation #1).

L.D. 2288 -- Resolve, To Create a Deer
Predation Working Group
Appendices

Appendix 1

Deer Management Planning Documents

- Appendix 1A Strategic Planning for Wildlife: The Maine Experience
- Appendix 1B White-tailed Deer Assessment and Strategic Plan, 1997
- Appendix 1C 1999 Big Game Working Group Membership List
- Appendix 1D White-tailed Deer Management Issues and Concerns
- Appendix 1E White-tailed Deer Management Goals and Objectives 2000-2015
- Appendix 1F Feasibility Statements for White-tailed Deer Goals and Objectives
- Appendix 1G Problems and Strategies for White-tailed Deer Management in Maine

Appendix 1A

Strategic Planning for Wildlife: The Maine Experience

.... managing Maine's wildlife populations to meet society's expectations



History of Maine Experience - The Maine Department of Inland Fisheries and Wildlife (MDIFW) initiated comprehensive planning in 1968 and has refined and expanded the process with each planning update. Initial plans were quite rudimentary; department biologists crafted species management goals and objectives that were reviewed by a 9-member public steering committee and a citizen's Advisory Council. In 1985, the department embarked on a major effort to entrust the public with establishing long term, species management objectives, and required the public to entrust the department with developing management actions to meet the objectives.

Species Driven – Maine's planning process is species driven. Strategic plans are developed for individual species (deer, moose, ruffed grouse, spotted turtle, Tomah mayfly) or groups of species (migratory shorebirds, passerines, island nesting seabirds). Ultimately, MDIFW intends to develop plans for all game and endangered and threatened species, as well as other species of special management concern (more than 90 individual species and groups of species). To date, we are more than half way there. The process is the same, regardless of species status.

For nongame species with no immediate management concern, Maine has initiated a broad-based approach to habitat conservation called *Beginning with Habitat*. This project is a collaborative effort of private and public organizations including MDIFW, Maine Natural Areas Program, Maine State Planning Office, U.S. Fish and Wildlife Service, Maine Audubon Society, Southern Maine Regional Planning Commission, and the Wells National Estuarine Research Reserve. *Beginning with Habitat* is based on a landscape, or regional, model developed with the assistance of the University of Maine Cooperative Wildlife Research Unit and is focused on conservation of wildlife habitats in southern and central Maine. The foundation of this approach is to encourage towns to:

- conserve riparian habitats through effective implementation of the current Shoreland Zoning regulations,
- conserve identified special wildlife and plant habitats through resource protection zoning and other conservation tools, and

- maintain large blocks of forest and grassland habitats by maintaining rural areas and encouraging concentration of development.

Public Working Groups Set Management Direction – A meaningful evolution in Maine's planning process has been an expansion of public involvement in the development of management goals and objectives within the biological sideboards of a species assessment prepared by department biologists⁴. The species assessment develops informed stakeholders and establishes common ground.

The composition of working groups is structured to ensure representation of a variety of interests (sportsmen's groups, NGOs, landowners, tourism groups, concerned citizens, outspoken critics, etc.) as well as a geographical mix. Every effort is made to keep the group balanced. Members of working groups give freely of their time and advice and provide an essential element to the development of species management plans.

The department conducts working group meetings in a manner designed to encourage active participation by group members while minimizing participation by department staff. Ground rules, agreed to by participants, seek to understand and respect others' perspectives, maximize participation, and move the process forward. A facilitator, often the department's planner, conducts each meeting, although occasionally a facilitator from outside the agency is hired.



Meetings are opened with a department overview of the assessment for each species, followed by a discussion of the issues and concerns the working group believes are important to the management of that species or species group. Questions, issues and concerns, and the resulting goals and objectives are recorded and displayed during the course of the meeting. Subsequently, the Department distributes a meeting summary and related material to all working group members.

After the working group develops goals and objectives, the Department evaluates them based on 1) desirability, 2) feasibility, 3) capability of the habitat, and 4) possible consequences, and identifies a number of associated problems and potential strategies of managing toward the goals and objectives.



These reports are shared with the working group, and if warranted, the working group modifies the goals and objectives before the Department presents them to a 10-member citizen's Advisory Council for adoption. Once adopted, the goals and objectives become the Wildlife Division's "marching orders".

Management systems, developed by department biologists, document how the department will reach the goals and objectives by clearly defining data collection

⁴ The assessment, a compilation of everything that we know about a particular species, critically reviews current and past management, goals and objectives, habitat, population size, and use and demand for hunting, trapping, and other wildlife-associated recreation. A final element of the assessment is a discussion of future projections for habitat, population size, and use and demand for the resource.

protocol, analyses, and interpretation. They also establish rules-of-thumb that drive management actions. These systems undergo regular evaluation and peer review allowing them to be dynamic and adaptive.

In summary, Maine's strategic planning process recognizes the department's legal mandates, public expectations, and the department's ability to meet those mandates and expectations. Public involvement occurs during all stages of the process:

- species experts from outside the agency review the species assessment;
- a public working group develops management goals and objectives;
- goals and objectives are presented to a 10-member citizen's Advisory Council for approval;
- publicly-derived goals and objectives are the foundation of management systems which are reviewed by technical experts from outside the agency;
- management actions may necessitate public informational meetings; and
- rulemaking proceedings require public hearings and input from a citizen's Advisory Council.

Although not perfect, the process has proven to be exceedingly beneficial to the department and to the public it serves over the 18 years the process has been in effect.

Appendix 1B

White-tailed Deer Assessment and Strategic Plan 1997

By: Gerald Lavigne
Department of Inland Fisheries and Wildlife
Augusta, ME
May, 1999

(View a copy of the assessment at
<http://www.maine.gov/ifw/wildlife/species/plans/mammals/whitetaileddeer/speciesassessment.pdf>)

Appendix 1C

1999 Big Game Working Group

(Black Bear, Eastern Coyote, Moose, and White-tailed Deer)

Invited Participants

Name	Affiliation
Vaughn Anthony*	Sportsman's Alliance of Maine
John Banks	Penobscot Nation (Alternate)
Toni Blake*	Moosehead Lake Region Chamber of Commerce
Wayne Bosowicz*	Maine Professional Guides Association
Harold Brown*	Fish and Wildlife Advisory Council
Barry Burgason	Forest Products Council (Alternate)
Debra Davidson*	Defenders of Wildlife
Gary Donovan*	Forest Products Council
Rocky Freda*	Bethel Area Chamber of Commerce
Dr. Kathleen Gensheimer	Maine Lyme Disease Working Group (Alternate)
Dale Goodman	Maine Professional Guides Association (Alternate)
John Greene*	Deer Depredation Impacts
Vaughn Haines*	Northern Maine Representative
Don Helstrom	Maine Professional Guides Association (Alternate)
Senator Leo Keiffer*	Legislative F&W Committee
Senator Marge Kilkelly	Legislative F&W Committee
Eleanor LaCombe*	Maine Lyme Disease Working Group (Alternate)
Skip Lisle*	Penobscot Nation
Jill Martel*	Maine Sporting Camp Association (Alternate)
Cathie McBreairty*	Moose Vehicle Collisions
Omer McBreairty	Moose Vehicle Collisions (Alternate)
Jack McPhee*	Maine Sporting Camp Association
John Miller*	Southern Maine Representative
Roger Milligan*	Eastern Maine Representative
Bill Nicholas	Passamaquoddy Nation
Mickey Noble*	Western Maine Representative
John Olsen	Maine Farm Bureau
Ellen Peters	Fish and Wildlife Advisory Council
Dr. Peter Rand*	Maine Lyme Disease Working Group
Jeff Romano	Small Woodlot Owners Association
Michael Rovella*	Maine Bowhunters Association
Sally Stockwell	Maine Audubon
Norman "Skip" Trask*	Maine Trappers Association

*Active participants

Appendix 1D

White-tailed Deer Management Issues and Concerns

Raised by the 1999 Big Game Working Group, December 16, 1999

Population/Management

- Current management is good, deer numbers are good, any-deer permit system is working.
- Need to consider geographic differences in the deer population. Northern and eastern Maine are still problem areas.
- Consider more predator control in downeast Maine.
- Concerned about the quality of bucks and low deer numbers in northern Maine.
- Put more emphasis on increasing the deer herd in eastern Maine. Conduct more research in order to determine what factor(s) are suppressing the deer herd in the downeast area.
- Interactions between deer and bear, moose, and coyote.
- Don't manage all areas of the state the same way.
- Manage for quantity rather than quality, central Maine is okay.

Habitat

- Need greater emphasis on locating all deer wintering areas.
- Logging operations are harvesting too much spruce-fir forests and are affecting deer winter survival in some parts of the state.
- Habitat changes in northern Maine are negatively affecting deer.

Deer Damage/Impacts

- Deer are becoming too abundant in central and southern Maine resulting in damage to habitat, crops, ornamentals, and other property.
- Concerns about the impact of high deer densities on forest regeneration, vehicle collisions, and the risk to human health (Lyme disease, etc.).

Use Opportunity

- Need to balance hunting opportunity between firearms hunters and other hunting groups (archers, muzzleloaders).
- Maximize hunting opportunities in certain areas instead of managing for trophy bucks.
- Increase the length of the muzzleloading season and allow extra deer.
- Concerns about posted land and firearm discharge ordinances creating obstacles to effective regulation and management of deer populations.
- Hunting and viewing opportunity is important, including quality and quantity of deer available, availability of mature (trophy) deer, and ensuring a quality experience.

Appendix 1E

White-tailed Deer Management Goals and Objectives 2000-2015

*Adopted by MDIFW Commissioner and Advisory Council
February 22, 2001*

Wildlife Management Districts 1-11

- Short-term Goal:** Provide hunting and viewing opportunity for white-tailed deer, while preventing over-browsing of deer wintering habitat.
- Short-term Objective:** Bring the deer population to 50 to 60% of the carrying capacity of the wintering habitat by the year 2004, then maintain at that level.
- Long-term Goal:** Increase hunting and viewing opportunity for white-tailed deer, while preventing over-browsing of deer wintering habitat.
- Long-term Objective:** Increase deer wintering habitat to 8% of the land base to ensure sufficient wintering habitat to accommodate a post hunt population of 10 deer/mi² by the year 2030 (or sooner), and then maintain as for the short-term objective.

Wildlife Management Districts 12, 13, 14 and 18

- Short-term Goal:** Provide hunting and viewing opportunity for white-tailed deer, while preventing over-browsing of deer wintering habitat.
- Short-term Objective:** Bring the deer population to 50 to 60% of the carrying capacity of the wintering habitat by the year 2004, then maintain at that level.
- Long-term Goal:** Increase hunting and viewing opportunity for white-tailed deer, while preventing over-browsing of deer wintering habitat.
- Long-term Objective:** Increase deer wintering habitat to 9 to 10% of the land base to ensure sufficient wintering habitat to accommodate a post hunt population of 15 deer/mi² (when on summer range) by the year 2030 (or sooner), and then maintain as for the short-term objective.

Wildlife Management Districts 19, 27, 28 and 29

- Short-term Goal:** Provide hunting and viewing opportunity for white-tailed deer, while preventing over-browsing of deer wintering habitat.
- Short-term Objective:** Bring the deer population to 50 to 60% of the carrying capacity of the wintering habitat by the year 2004, then maintain at that level.
- Long-term Goal:** Increase hunting and viewing opportunity for white-tailed deer, while preventing over-browsing of deer wintering habitat.
- Long-term Objective:** Increase deer wintering habitat to 9 to 10% of the land base to ensure sufficient wintering habitat to accommodate a post hunt population of 15 deer/mi² (when on summer range) by the year 2030 (or sooner), and then maintain as for the short-term objective.

Wildlife Management Districts 16, 17, 22, 23, and 26

- Goal:** Balance the desire for deer hunting and viewing opportunity with the need to reduce negative impacts of deer from browsing damage, collisions with motor vehicles, and potential risk of Lyme disease.
- Objective:** Bring the post hunt deer population to 20 deer/mi² (or no higher than 60% of Maximum Supportable Population) by 2004, then maintain.

Wildlife Management Districts 15, 20, 21, 24, 25, and 30

- Goal:** Balance the desire for deer hunting and viewing opportunity with the need to reduce negative impacts of deer from browsing damage, collisions with motor vehicles, and potential risk of Lyme disease.
- Objective:** Bring the post hunt deer population to 15 deer/mi² (or no higher than 60% of Maximum Supportable Population) by 2004, then maintain.

Appendix 1F

Feasibility Statements for White-tailed Deer Goals and Objectives

Prepared by: Gerald Lavigne
January 2000

Wildlife Management Districts 1-11 (Northern Maine)

Short-term Goal: Provide hunting and viewing opportunity for white-tailed deer, while preventing over-browsing of deer wintering habitat.

Short-term Objective: Bring the deer population to 50 to 60% of the carrying capacity of the wintering habitat by the year 2004, then maintain at that level.

Long-term Goal: Increase hunting and viewing opportunity for white-tailed deer by increasing deer wintering habitat to potentially support 10 deer /mi² on summer range.

Long-term Objective: Increase deer wintering habitat to 8% of the land base to ensure sufficient wintering habitat to accommodate a post hunt population of 10 deer/mi² by the year 2030 (or sooner), and then maintain as for the short-term objective.

The two-tiered goal and objective statements recognizes that availability of wintering habitat is the primary obstacle to increasing deer populations on a sustainable basis. Winters are characteristically severe for deer in these WMDs. As a result, deer are highly dependent on wintering habitat for survival nearly every year.

Desirability: There is widespread support for increasing the deer population in WMDs 1-11. Deer hunting is an important component of the rural economy of northern and western Maine. During the past 20 years, there has been an egress of hunters from this part of the state, largely in response to declining deer populations. Over the long term, restoration of deer populations could attract more deer hunters and watchers to WMDs 1-11.

Feasibility: Attainment of short-term goals can readily be accomplished using the Any-Deer permit system. However, we may find it difficult gaining hunter support for the doe harvests necessary to stabilize deer populations at their current low densities.

To attain the long-term goal of 10 deer /mi² on summer range, deer populations would be increased by 1.5 to 5x current densities on summer range (Table 18). This would require a corresponding increase in the quantity of wintering habitat. Accomplishment of this goal will require a substantial Department commitment to find socially acceptable ways of protecting and enhancing deer wintering habitat. Since most of this habitat is privately or corporately owned, landowner support for the deer wintering habitat program is essential to its success (this applies statewide).

Since spruce-fir inventory is expected to decline for another 10 years, the deer wintering area program must overcome the increased demand for spruce-fir timber products over the next several decades. We are likely to experience a net loss of deer wintering areas statewide

during the next decade. After that time, re-growth of spruce fir forests should accelerate, providing an opportunity to increase our wintering habitat base. If winters continue to moderate, effects of this wintering habitat loss should be less of an obstacle to maintaining the current deer population.

Capability of Habitat: Attainment of short-term goals of maintaining the deer herd "in balance" with existing wintering habitat implies limiting deer density at 50 to 60% of the carrying capacity of deer wintering habitat. Using antler beam diameter of yearling bucks as a guide, deer populations in WMDs 7 to 10 are already at this target carrying capacity (Table 18), while deer in WMDs 1 to 6 and WMD 11 are still below this level. However, we are uncertain if yearling buck antler size is an adequate index to winter carrying capacity, particularly where winters are very severe (WMDs 1-6).

During recent winters, regional biologists have noted heavy browsing, including bark stripping in several major DWAs. In some locations, deer are using hardwood-dominated stands in the periphery of major DWAs during deep snow conditions, to a greater extent than they formerly did. Both the heavy browsing and use of hardwood sites during recent severe winters suggests deer in WMDs 1-6 may also be at or above 50 to 60% of the carrying capacity of deer wintering areas. Beginning in 1998, we initiated doe harvests designed to stabilize deer populations in WMDs 1 to 11. This management strategy will likely continue, unless research on the relationship of northern Maine deer to winter carrying capacity indicates other strategies (e.g., increasing or decreasing herd size) should be pursued. We also recognize that browsing by locally abundant moose populations near major DWAs between May and December may negatively affect forage availability to deer in these wintering habitats.

Given current wintering conditions, a population of 10 deer /mi² on summer range in WMDs 1-11 would require nearly 780,000 acres (1,217 mi²) of deer wintering habitat (Table 7), or 7.8% of the area of these WMDs. The current known area of deer wintering habitat in WMDs 1 to 11 is 258,600 acres (404 mi²), or 2.6% of the area of these WMDs. Hence, attaining the long-term deer population goals in northern and western Maine may require an additional one-half million acres of deer wintering habitat. Prior to the mid 1970's, deer wintering habitat comprised 10 to 12% of the area of northern and western Maine.

Since summer range can support >60 deer /mi² at K in WMDs 1-11, deer populations at proposed long-term goal of 10 /mi² would not negatively impact vegetation, and individual deer would remain in excellent reproductive and physiological condition.

Possible Consequences: Attainment of the short-term goal will result in increased opportunity for harvest of antlerless deer, as populations are stabilized. However, continued loss of wintering habitat over the next decade will result in lower deer populations and harvests.

Harvests of antlerless deer would not be warranted when abnormally severe wintering conditions occur in northern and western WMDs. In northern WMDs, doe harvest regulation alone may not fully counteract high winter losses following severe winters. Populations will still decline, although not to the same degree as when doe harvests are not curtailed.

If long-term population goals are achieved, allowable harvests in WMDs 1-11 would be substantially higher than is currently possible (Table 18). Deer harvest to stabilize populations of 10 deer /mi² in WMDs 1 to 11 would approximate 12,400 deer /year compared to 5,500 deer harvested /year (or less) currently. Projected harvests at goal attainment may prove to be

conservative. If improved quantity and quality of wintering habitat results in better over-winter survival, harvest necessary to stabilize the herd will be correspondingly higher.

Attainment of long-term population goals in northern and western Maine would result in increased hunting success rate (Tables 6 and 18). Projected success rates, when the deer population is 10 deer /mi², are unrealistically high for heavily wooded habitats in Maine. A reasonable estimate for hunter success in these WMDs would be roughly 25%. If winter habitat was increased to proposed levels, a net increase in hunting effort or predation would be required to stabilize deer populations at 10 deer /mi² in WMDs 1-11.

When at goal (10 deer /mi²), deer density may be at the threshold where transmission of brainworm to moose occurs more regularly. This may affect natural mortality rate of moose, and therefore, allowable moose harvest. In addition, maintaining a greater proportion of WMDs 1-11 in mature coniferous forest would adversely affect overall carrying capacity for moose. Higher deer populations, when at goal, would also impact browse available to moose and hare.

Wildlife Management Districts 12, 13, 14 and 18 (Western Mountain Foothills)

Short-term Goal: Provide hunting and viewing opportunity for white-tailed deer, while preventing over-browsing of deer wintering habitat.

Short-term Objective: Bring the deer population to 50 to 60% of the carrying capacity of the wintering habitat by the year 2004, then maintain at that level.

Long-term Goal: Increase hunting and viewing opportunity for white-tailed deer, while preventing over-browsing of deer wintering habitat.

Long-term Objective: Increase deer wintering habitat to 9 to 10% of the land base to ensure sufficient wintering habitat to accommodate a post hunt population of 15 deer/mi² (when on summer range) by the year 2030 (or sooner), and then maintain as for the short-term objective.

Desirability: Comments similar to previous section

Feasibility: As with more northerly WMDs, attainment of the short-term goal can readily be accomplished by regulating the antlerless deer harvest. Attainment of the long-term goal would require an increase in deer population by 1.15 to 2x among the 4 WMDs (Table 18).

Capability of Habitat: Current deer populations in WMDs 12 to 14 and 18 range from 8 to 13 deer /mi² (Table 18). Based on yearling antler size, deer populations in each of these WMDs is currently between 50 and 60% of Maximum Supportable Population (MSP). Winters in these WMDs are shorter and less severe than more northerly WMDs. Because winters are typically less severe, higher deer densities can be sustained in wintering habitat (Table 7). This allows us to manage for a higher, long-term summer density in WMDs 12 to 14 and 18 than would be possible in the north. Since the carrying capacity of summer range exceeds 60 deer /mi², attainment of 15 deer /mi² on summer range in these WMDs would not negatively impact vegetation or deer productivity and physiological condition.

Attainment of long-term goals in WMDs 12 to 14 and 18 would require nearly 220,000 acres (337 mi²) of wintering habitat, or 9.4% of the landbase in these WMDs (Table 18). Historical quantity of deer wintering habitat approximated 10 to 15% of the landbase in this part of the

state. Current inventory of deer wintering habitat in these WMDs is incomplete, particularly for WMD 14. Current known inventory of deer wintering habitat in these WMDs is roughly 94,000 acres or 4.1% of the landbase.

Possible Consequences: Attainment of short-term goals would result in a slight increase in antlerless harvest, as doe harvests are increased to stabilize populations at current density.

When long-term goals are attained, allowable deer harvest would approximate 5,750 deer, which is substantially higher than current (1997) harvests (3,500 deer; Table 18). As with northern WMDs, deer harvests which stabilize the deer population at 15 deer /mi² in WMDs 12 to 14 and 18 may be higher than projections given in Tables 6 and 18, if attainment of high quality wintering habitat results in improved over-winter survival of deer.

Projected hunter success rates when long-term population goals are reached (Table 18) for WMDs 12 to 14 and 18 are unrealistically high (i.e., >25%), suggesting a net increase in hunters (or predation) would be required to stabilize deer populations at 15 /mi².

Comments pertaining to competition with moose (see WMDs 1-11) apply here as well.

Wildlife Management Districts 19, 27, 28, and 29 (Downeast Maine)

Short-term goal: Provide hunting and viewing opportunity for white-tailed deer, while preventing over-browsing of deer wintering habitat.

Short-term Objective: Bring the deer population to 50 to 60% of the carrying capacity of the wintering habitat by the year 2004, then maintain at that level.

Long-term goal: Increase hunting and viewing opportunity for white-tailed deer, while preventing over-browsing of deer wintering habitat.

Long-term Objective: Increase deer wintering habitat to 9 to 10% of the land base to ensure sufficient wintering habitat to accommodate a post hunt population of 15 deer/mi² (when on summer range) by the year 2030 (or sooner), and then maintain as for the short-term objective.

Desirability: Deer populations in the Downeast region have dropped dramatically since peak abundance in the late 1940's. As deer populations decreased, hunters shifted to more favorable parts of the state. The Downeast economy is highly dependent on its natural resources. The added revenue that improved hunting opportunity would bring to this area of the state would be highly valued. Hence, increasing deer populations in WMDs 19, 27, 28 and 29 is highly desirable.

Feasibility: Attainment of the short-term goal would require an increase in the deer population in WMDs 19, 27, 28, and 29. Although the quantity of available wintering habitat is far below what was available prior to 1975, current deer populations in these WMDs appear to be below what the current inventory of wintering habitat can support. Increasing local deer populations in this area will require a reduction in adult doe annual losses, and/or an increase in early survival of fawns (recruitment). Since these WMDs already have been subjected to bucks-only hunting since 1983, improving doe or fawn survival cannot be achieved by regulating the legal harvest alone. Successful attainment of the short-term goal in WMDs 19, 27, 28, and 29 may require achieving a significant reduction in illegal kill, road-kill, predation on adult does, and predation

on young fawns. Since the relative importance of the above mortality factors is unknown, it is difficult to predict how much effort at reducing these losses will result in a positive response in the deer population.

Capability of the Habitat: Based on the antler development of yearling bucks, deer in WMDs 19, 27, 28, and 29 are currently below MSP (Table 18). Hence, current wintering habitat can accommodate more deer. Although we are not closely monitoring browsing trends in Downeast DWAs, we generally have not noted examples of excessive browsing or bark stripping there. Moreover, winters are typically mild in this part of the state; recently they have been below average in severity. Severe winters occur only once or twice per decade.

To attain the long-term goal of 15 deer per mi², deer populations would be 2 to 5x current population density on summer range (Table 18). Since the summer range in WMDs 19, 27, 28, and 29 can support at least 60 deer /mi² (at summer K), attainment of the long-term population goal would not negatively impact vegetation, or deer productivity and physiological condition.

Attainment of the long-term population goal would require nearly 200,000 acres (309 mi²) of deer wintering habitat, or 9.4% of the landbase of WMDs 19, 27, 28, and 29. Current inventory of deer wintering habitat is among the lowest in the state: about 33,000 acres (51 mi²) or 1.5% of the landbase. Prior to 1975, deer wintering habitat comprised 10 to 15% of the landbase Downeast.

Possible Consequences: Large-scale efforts to reduce deer losses to predation will be met with opposition from stakeholders who oppose predator control.

Attainment of the short-term goal will result in higher deer harvest and hunting opportunity. Potential harvest, when the long-term goal is achieved, would be dramatically higher (4,500 deer) than current deer harvests (1,450 deer; Table 18). As with other WMDs, potential harvests will be higher than those projected in Table 18, if wintering habitat quality improves along with wintering habitat quantity.

Comments pertaining to competition with moose (see WMDs 1-11) apply here as well.

Wildlife Management Districts 16, 17, 22, 23, and 26 (Central Maine)

Goal: Balance the desire for deer hunting and viewing opportunity with the need to reduce negative impacts of deer from browsing damage, collisions with motor vehicles, and potential risk of Lyme disease.

Objective: Bring the post hunt deer population to 20 deer/mi² (or no higher than 60% of Maximum Supportable Population) by 2004, then maintain.

Desirability: Deer populations are thriving in central Maine. Since 1983, deer populations have responded to reduced doe harvests and mild to moderate wintering conditions, enabling significant progress toward achieving population objectives set in 1985 (deer population at 50 to 60% of MSP).

Deer in WMDs 16, 17, 22, 23, and 26 accommodate a significant amount of hunting opportunity. Deer harvests are now higher in these central Maine WMDs than during most former decades this century.

As the deer population increased in these districts, so too did concerns regarding increased road-kills, crop damage, excessive browsing of ornamental plantings, and risk of humans contracting Lyme disease. Note: Human cases of Lyme disease are currently non-existent or very rare in these WMDs. Although the most serious negative impacts of the central Maine deer population are occurring where hunting access is limited and deer are more abundant, central Maine deer populations may soon increase to the point where nuisance complaints are more numerous and widespread.

The population objectives selected for WMDs 16, 17, 22, 23, and 26 reflect a desire to accommodate a substantial demand for deer hunting while holding nuisance complaints within reasonable bounds.

Feasibility: Attainment of the population goal for central Maine WMDs will require stabilizing or reducing current populations (Table 18). Since deer populations have continued to increase since 1997, herd reductions probably will be necessary to achieve the goal in all central Maine WMDs. This will require substantial allocations of Any-Deer permits. Whether or not we will be successful at reducing local deer populations to desired densities will depend upon hunter willingness to kill antlerless deer, and upon sufficient access to hunt deer. Landowner willingness to accommodate hunting is essential to controlling deer population growth in WMDs 16, 17, 22, 23, and 26 (this applies statewide).

Capability of Habitat: Attainment of 20 deer per mi² in central Maine WMDs would keep the herd below 50% of MSP (Table 18). Existing wintering habitat can easily accommodate this population, given prevailing mild winters. However, current wintering habitat may be insufficient to accommodate this population during severe winters (once per decade when our Winter Severity Index exceeds 70). Winter habitat selection by deer in central and southern Maine is poorly understood. Applying winter habitat standards developed for deer in northern WMDs to southern Maine WMDs may result in an under-estimate of winter habitat actually used by deer.

Possible Consequences: Initially, antlerless deer harvests in WMDs 16, 17, 22, 23, and 26 will increase substantially, as deer populations are stabilized or reduced to 20 deer /mi². For the past 15 years, doe harvests have been curtailed to promote slow population growth. However, deer harvests needed to maintain deer at 20 /mi² at goal in central Maine WMDs (16,050) will be slightly less than current (1997) harvests (17,600 deer; Table 18). This would be true for antlered bucks as well as antlerless deer. Since deer populations in central Maine WMDs would be held below 50% of MSP, harvests generally will be less than maximum sustained yield.

Overall deer harvests in central Maine WMDs could be increased while at goal densities if previously under-hunted land becomes available for harvest. Hence, programs designed to improve hunter access can contribute to satisfying the demand for hunting opportunity, while simultaneously reducing nuisance deer populations and increasing the deer harvest.

When the proposed population goals are achieved for central and southern Maine, we expect a slightly lower deer harvest. Although fewer deer will be harvested, hunter success rates will increase during the next 15 years, if trends in hunter participation continue to decline.

Wildlife Management Districts 15, 20, 21, 24, 25, and 30 (Southern and Coastal Maine)

Goal: Balance the desire for hunting and viewing opportunity with the need to reduce negative impacts of deer from browsing damage, collisions with motor vehicles, and potential risk of Lyme disease.

Objective: Bring the post hunt deer population to 15 deer/mi² (or no higher than 60% of Maximum Supportable Population) by 2004, then maintain.

Desirability: Southern and coastal WMDs support Maine's highest human population densities. During the past 30 years, residential sprawl in this part of the state has significantly impacted our ability to access and control local deer populations. Deer habitat in WMDs 15, 20, 21, 24, 25, and 30 is a highly heterogeneous patchwork, within which deer densities range from <10 deer /mi² to 100 or more deer /mi². Both deer density and the level of negative impacts from deer browsing, road-kill, and Lyme disease risk are inversely related to deer hunting access. From the standpoint of minimizing negative impacts of deer, attainment of the population goal of 15 deer /mi² throughout WMDs 15, 20, 21, 24, 25, and 30 is highly desirable.

Feasibility: Attaining the goal of 15 deer /mi² in southern and coastal Maine WMDs would require dramatically higher deer harvests over a number of years in those areas which are now under-hunted or un-hunted. Gaining hunting access for the purpose of deer removal and population reduction will require a great deal of cooperation between the Department, municipalities, individual landowners, and hunters. Overcoming negative perceptions about hunters and killing of deer will be a necessary, but difficult task in southern Maine. In some instances, legislation would be required to legalize deer hunting on several islands and mainland sanctuaries that have been closed to deer hunting since the early part of this century.

Capability of Habitat: Deer in localized parts of WMDs 20, 21, 24, 25, and 30 are near the maximum supportable population, i.e. 100 deer /mi². Attainment of the goal of 15 deer /mi² would ensure that the population throughout southern and coastal Maine remains well below carrying capacity.

Winters are rarely severe in this part of Maine. When a severe winter occurs, existing wintering habitat would not be sufficient to accommodate the current population. Hence, winter losses would be high throughout the area.

Possible Consequences: Achievement of the population goal would minimize human conflicts with deer, particularly in those parts of WMDs 15, 20, 21, 24, 25, and 30 where deer populations are now excessive.

Failure to gain support for deer population regulation by hunting (controlled or recreational) will lead to increased demands for more expensive (and in some cases, less effective) non-traditional methods of deer population control (e.g., trap and transplant, sharpshooting, fertility control). Projected estimates of deer harvest for southern Maine WMDs when at goal vs. current harvest (Table 18) significantly under-estimates true harvest potential. Harvest estimates presented in Table 18 do not include the deer harvest that would become available when previously closed land is open to hunting, nor does it include the substantial deer harvest necessary to bring deer density from 50 to 100 deer /mi² down (over time) to 15 deer /mi². Similarly, estimates of deer hunting success in WMDs 20, 21, 24, 25, and 30 are biased low.

There is a danger, when allocating increased hunting opportunity, that buck quality will be adversely impacted, and deer populations will decline in areas where hunting access is patchy. Allocating greater numbers of Any-Deer permits to control deer on 1,000 mi², when only 250 mi² is open to deer hunting, will result in over-harvest on huntable land, while failing to impact deer over the larger, inaccessible area. This may already be occurring in WMDs 20, 21, and 24.

Statewide Overview

Attainment of proposed deer population (long-term) goals in each of Maine's 30 WMDs would result in a deer population which is within 15 to 55% of maximum supportable populations, and would approximate a wintering herd of nearly 384,000 deer, or 13 /mi². Allowable deer harvest at target population would exceed 46,000 deer annually. Hunting success would exceed 20% in all WMDs, and a net increase in deer hunters would be required to achieve desired harvests in northern and eastern WMDs. Wintering habitat requirements for the 384,000 wintering deer would be approximately 1.7 million acres, or 9.1% of the landbase, overall.

Table 6. Deer population, harvest, and hunter success objectives to be achieved in Maine by 2030, by Wildlife Management Districts.

WMD	Population Target (% of MSP) ^a	Wintering Population Size at Target ^b		Allowable Harvest ^c At Target	Potential
		Number	Number/Mi ²		Hunting Success
					Rate ^d % At Target
1	55	14,150	10	1,100	64
2	55	11,750	10	900	59
3	55	9,300	10	800	25
4	55	19,600	10	1,350	51
5	55	15,450	10	950	37
6	55	13,800	10	1,350	23
7	55	13,650	10	1,100	43
8	55	20,400	10	1,800	36
9	55	9,500	10	850	33
10	55	8,850	10	850	28
11	55	16,650	10	1,450	25
12	55	14,050	15	1,450	38
13	55	8,500	15	900	38
14	55	11,900	15	1,250	37
15	48	14,950	15	2,300	26
16	50	14,350	20	2,450	28
17	43	27,250	20	4,500	29
18	55	19,500	15	2,150	26
19	55	17,500	15	1,650	38
20	62	9,000	15	2,100	23
21	51	7,300	15	1,850	24
22	44	10,400	20	2,100	26
23	32	18,250	20	3,050	25
24	25	4,150	15	1,050	24
25	49	7,250	15	1,400	20
26	43	11,150	18	1,650	25
27	55	12,250	15	1,350	34
28	55	12,400	15	1,100	51
29	55	7,300	15	650	41
30	15	3,000	15	1,200	50

^a Percent of Maximum Supportable Population, ie. the maximum number of deer that can survive in that WMD, given the amount of wintering habitat available in 2030.

^b Assumes area of deer habitat in WMD will be same as area in 1997.

^c Yield of bucks, given current rates of hunting effort for bucks. Harvest among antlerless deer is that number which stabilizes the population when at target.

^d Assumes hunter density approximates those listed in Table 17. Success rates above 25% are probably not feasible. WMDs with potential success >25% require an influx of hunters to achieve harvest potential.

Table 7. Amount of wintering habitat required to support target population objectives, by Wildlife Management Districts in Maine, by 2030.

WMD	Target Wintering Population ^a		Optimum Stocking in Wintering Habitat		Projected Wintering Conditions ^b		Wintering Habitat Required				
	Deer/Mi ²	Habitat	Deer-Days Use	Maximum Wintering Density (Deer / mi ²)	W	SI	Yarding Period (Days)	Acres/	Total	Total	Percent of WMD
	Number of Deer							Deer	Acres	Mi ²	
0	14,150	10	15,000	110	88	135	5.8	82,070	128	9.0	
2	11,750	10	15,000	120	87	125	5.3	62,275	97	8.2	
3	9,300	10	15,000	125	84	120	5.1	47,430	74	7.9	
4	19,600	10	15,000	110	85	135	5.8	113,680	178	9.1	
5	15,450	10	15,000	125	79	120	5.1	78,795	123	8.0	
6	13,800	10	15,000	125	79	120	5.1	70,380	110	8.0	
7	13,650	10	15,000	135	73	110	4.7	64,155	100	7.3	
8	20,400	10	15,000	120	79	125	5.3	108,120	169	8.3	
9	9,500	10	15,000	140	71	105	4.5	42,750	67	7.1	
10	8,850	10	15,000	160	70	100	4.3	38,055	59	6.7	
11	16,650	10	15,000	160	70	100	4.3	71,595	112	6.7	
12	14,050	15	15,000	160	70	100	4.0	56,200	88	9.4	
13	8,500	15	15,000	160	70	100	4.0	34,000	53	9.4	
14	11,900	15	15,000	160	70	100	4.0	47,600	74	9.3	
15	14,950	15	15,000	160	70	100	4.0	59,800	93	9.3	
16	14,350	20	15,000	160	70	100	4.0	57,400	90	12.5	
17	27,250	20	15,000	160	70	100	4.0	109,000	170	12.5	
18	19,500	15	15,000	160	70	100	4.0	78,000	122	9.4	
19	17,500	15	15,000	160	70	100	4.0	70,000	109	9.3	
20	9,000	15	15,000	160	70	100	4.0	36,000	56	9.3	
21	7,300	15	15,000	160	70	100	4.0	29,200	46	9.4	
22	10,400	20	15,000	160	70	100	4.0	41,600	65	12.5	
23	18,250	20	15,000	160	70	100	4.0	73,000	114	12.5	
24	4,150	15	15,000	160	70	100	4.0	16,600	26	9.4	
25	7,250	15	15,000	160	70	100	4.0	29,000	45	9.3	
26	11,150	18	15,000	160	70	100	4.0	44,600	70	11.3	
27	12,250	15	15,000	160	70	100	4.0	49,000	77	9.4	
28	12,400	15	15,000	160	70	100	4.0	49,600	78	9.4	
29	7,300	15	15,000	160	70	100	4.0	29,200	46	9.4	
30	3,000	15	15,000	160	70	100	4.0	12,000	19	UNK	

^a Population to be achieved and maintained by the year 2030, as set forth in Table 6.

^b For WMDs 1 to 11, assumes winters between 1999 and 2030 will average the same level of severity as those from 1980-98. For WMDs 12 to 30, assumes some winters will approximate WSI of 70 (moderate to severe conditions), thereby requiring sufficient winter carrying capacity for moderately restrictive yarding conditions spanning 100 days. See Table 12.

Table 18. Summary of objective vs. current deer population, wintering habitat, harvest, and hunter success.

Wildlife Management District	Percent of MSP		Wintering Deer /mi ²		Wintering Habitat (% of WMD)		Harvest to Stabilize		Hunter Success Rate %	
	Current	Target	Current	Target	Current	Target	Current	Target	Current	Potential ^a
	1997		1997		Known	Required	1997		1990-96	
1	42	55	5.7	10	3.0	9.0	651	1,100	26	64
2	47	55	2.6	10	2.2	8.2	218	900	11	59
3	36	55	1.8	10	1.8	7.9	129	800	3	25
4	43	55	4.6	10	1.9	9.1	543	1,350	18	51
5	45	55	7.0	10	2.6	8.0	641	950	17	37
6	31	55	3.1	10	1.4	8.0	438	1,250	4	23
7	55	55	7.3	10	2.9	7.3	789	1,100	24	43
8	51	55	5.1	10	2.1	8.3	762	1,800	14	36
9	56	55	2.9	10	2.1	7.1	236	850	8	33
10	57	55	3.9	10	3.2	6.7	330	850	8	28
11	43	55	5.5	10	5.5	6.7	829	1,450	12	25
12	58	55	10.1	15	2.4	9.4	943	1,450	16	38
13	50	55	13.3	15	3.3	9.4	817	900	23	38
14	52	55	8.0	15	1.1	9.3	610	1,250	16	37
15	53	48	16.2	15	3.2	9.3	2,485	2,300	18	26
16	48	50	19.2	20	9.5	12.5	2,335	2,450	16	28
17	48	43	22.0	20	8.7	12.5	4,904	4,500	21	29
18	51	55	7.8	15	7.4	9.4	1,158	2,150	9	26
19	42	55	2.7	15	1.2	9.3	236	1,650	4	38
20	45	62	10.6	15	5.1	9.3	1,519	2,100	12	23
21	47	51	13.9	15	4.7	9.4	1,780	1,850	15	24
22	44	44	19.8	20	10.8	12.5	2,250	2,100	13	26
23	47	32	25.8	20	14.2	12.5	3,902	3,050	19	25
24	45	25	27.5	15	1.9	9.4	2,027	1,050	25	24
25	41	49	12.6	15	9.5	9.3	1,221	1,400	9	20
26	47	43	19.6	18	5.7	11.3	1,720	1,650	12	25
27	47	55	9.0	15	1.9	9.4	737	1,350	10	34
28	44	55	3.9	15	2.0	9.4	250	1,100	5	51
29	41	55	5.0	15	1.0	9.4	212	650	5	41
30	UNK	UNK	UNK	15	UNK	UNK	UNK	1,200	UNK	50
Statewide	-	-	8.7		4.0	9.1	34,672	46,650	14	30

^aSuccess Rates above 25% are probably not feasible. WMDs with potential success >25% require an influx of hunters to achieve harvest potential.

Appendix 1G

Problems and Strategies for White-tailed Deer Management in Maine

Prepared by: Gerald Lavigne
January 2000

The following list describes broad-scale problems that have been identified during the drafting of the assessment, or during discussions with the working group. The potential list of problems that need to be overcome to attain deer objectives may be incomplete. Thoughtful review by the working group of problem statements and potential strategies to overcome identified problems will help ensure success of this strategic planning effort. Note that the finer details of setting doe harvest quotas are already accomplished using the Deer Population Management System.

Problem: Area of wintering habitat used by deer is not fully quantified.

Strategy 1: Standardize methods used to inventory DWAs among all regions.

Strategy 2: Refine and maintain a deer wintering habitat database to track progress toward attaining long-term DWA objectives.

Problem: Proportion of the landbase in functioning wintering habitat in most WMDs is below long-term objective.

Strategy: Develop a comprehensive habitat initiative to increase the deer wintering area resource.

Problem: We need unambiguous indices describing relationship of deer to their winter carrying capacity.

Strategy 1: Conduct research to identify which indices are most useful/affordable in monitoring deer density relative to winter carrying capacity.

Strategy 2: Implement a monitoring program designed to ensure deer remain in balance with wintering habitat.

Problem: Fifteen years of bucks-only hunting has failed to achieve significant increases in some Downeast WMDs. Deer are to be increased to 50 to 60% of winter carrying capacity.

Strategy 1: Conduct the research necessary to identify and prioritize those factors limiting deer recovery in downeast WMDs.

Strategy 2: Implement a deer population recovery program Downeast.

Problem: Hunter demographics may be changing, thereby impeding attainment of deer harvest prescriptions.

Strategy 1: Intensify surveys designed to monitor deer hunting participation among WMDs, on a yearly basis.

Strategy 2: Develop initiatives to increase deer hunting participation among younger residents of Maine and/or non-residents.

Strategy 3: Develop initiatives to better distribute hunter effort where needed to accomplish necessary harvest levels, or to minimize conflicts with landowners.

Problem: Human tolerance to negative impacts of deer varies in time and place.

Strategy 1: Periodically survey landowner attitudes toward deer population and its impacts.

Strategy 2: Implement a program designed to monitor deer roadkill trends and landowner complaints of deer browsing damage.

Problem: The relationship between deer density and human risk of Lyme disease is not completely understood.

Strategy 1: Conduct research needed to determine relationship between deer density and human risk of Lyme disease.

Strategy 2: Re-evaluate deer population objectives in light of research findings.

Problem: Access restrictions limit our ability to regulate deer populations.

Strategy 1: Conduct landscape-level research to determine land ownership/deer hunter access patterns in central and southern WMDs.

Strategy 2: Implement a program designed to increase deer hunting access on privately owned land.

Strategy 3: Implement a program designed to increase town government support of deer hunting programs where deer are above population objectives.

Strategy 4: Use legislative and rule-making authorities to open towns and individual sanctuaries currently closed to deer hunting.

Strategy 5: Address Warden Service concerns that some landowners are misusing deer depredation permits.

Strategy 6: Develop a Departmental policy clarifying the conditions under which non-traditional methods of deer control will be permitted.

Problem: Lack of funding and staffing to address research (data gathering) and management needs.

Strategy: Actively seek support for sufficient additional staff and financial resources to address research (data gathering) and management needs. Reallocating existing staff and financial resources is not feasible, as it would prevent achieving management goals and objectives for other species.

Appendix 2

Legislative Resolve

- Appendix 2A LD 823, Item 1: Resolve, To Create an Effective Coyote Control Program
- Appendix 2B LD 823, Item 2: Resolve, To Create an Effective Deer Habitat Enhancement and Coyote Control Program
- Appendix 2C LD 2288, Resolve, To Create a Deer Predation Working Group
- Appendix 2D Commissioner Martin's Letter Inviting Stakeholder Representatives to Participate in a Deer Predation Working Group
- Appendix 2E Deer Predation Working Group Member List

Appendix 2A

LD 823, Item 1: Resolve, To Create an Effective Coyote Control Program

Sec. 1 Coyote control program. Resolved: That the Commissioner of Inland Fisheries and Wildlife shall review the existing coyote control program. In reviewing the program, the commissioner shall establish methods of controlling the coyote population and set goals to manage the coyote population; and be it further

Sec. 2 Report. Resolved: That the Commissioner of Inland Fisheries and Wildlife shall report the commissioner's findings and recommendations under section 1 to the Joint Standing Committee on Inland Fisheries and Wildlife by December 30, 2007. The Joint Standing Committee on Inland Fisheries and Wildlife may submit legislation related to the report to the Second Regular Session of the 123rd Legislature.

SUMMARY

This resolve directs the Commissioner of Inland Fisheries and Wildlife to review the existing coyote control program. The commissioner shall report the commissioner's findings and recommendations to the Joint Standing Committee on Inland Fisheries and Wildlife by December 30, 2007. The Joint Standing Committee on Inland Fisheries and Wildlife may submit legislature to the Second Regular Session of the 123rd Legislature.

Appendix 2B

LD 823, Item 2: Resolve, To Create an Effective Deer Habitat Enhancement and Coyote Control Program

Sec. 1 Deer habitat enhancement and coyote control program. Resolved: That the Commissioner of Inland Fisheries and Wildlife shall establish a working group to review existing programs and efforts related to creating, enhancing and maintaining critical deer habitat in the State and reducing predation of deer by coyotes. In reviewing the programs and efforts, the working group shall look for ways to improve and increase wintering habitat for deer and for ways to increase the survivorship of deer on a year-round basis. The working group shall also establish methods of controlling coyote populations and set goals to manage the coyote populations; and be it further

Sec. 2 Report. Resolved: That the Commissioner of Inland Fisheries and Wildlife shall report the working group's findings, recommendations and draft legislation under section 1 to the Joint Standing Committee on Inland Fisheries and Wildlife by December 30, 2007. The Joint Standing Committee on Inland Fisheries and Wildlife may submit legislation related to the report to the Second Regular Session of the 123rd Legislature.

Appendix 2C

LD 2288, Resolve, To Create a Deer Predation Working Group

Sec. 1 Deer predation working group. Resolved: That the Commissioner of Inland Fisheries and Wildlife shall establish a deer predation working group to review and to recommend necessary revisions to the Department of Inland Fisheries and Wildlife's predation control policy. The 8-member working group must include representatives from the Department of Inland Fisheries and Wildlife, the University of Maine System, an organization that represents the needs of Maine's forest products community, an organization that represents trappers, an organization that represents professional guides, an environmental organization, an organization that represents sportsmen and an organization that represents small woodlot owners in the State; and be it further

Sec. 2 Duties. Resolved: That the working group shall consider:

6. Methods of coyote control;
7. Tools and devices to be employed in predation control;
8. The protocol used by the Department of Inland Fisheries and Wildlife to determine when and where to deploy animal damage control agents;
9. The need and consequences of reducing the bear population in northern and eastern Maine to allow the deer population to recover; and
10. The appropriate protocol for accomplishing bear reductions, if any, as determined under subsection 4.

The policy and protocols developed by the working group must adequately consider and minimize impacts to nontarget species, especially threatened and endangered species; and be it further

Sec. 3 Report. Resolved: That the Commissioner of Inland Fisheries and Wildlife shall report the working group's findings and recommendations and any recommended legislation to the joint standing committee of the Legislature having jurisdiction over inland fisheries and wildlife matters no later than January 5, 2009. That joint standing committee may submit legislation related to the report to the First Regular Session of the 124th Legislature.

House Amendment A to LD 2288 amended the 8-member working group to include a 9th member representing a statewide organization that represents farming.

Appendix 2D

Commissioner Martin's Letter Inviting Stakeholder Representatives to Participate in a Deer Predation Working Group



STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0041

JOHN ELIAS BALDACCI
GOVERNOR

ROLAND D. MARTIN
COMMISSIONER

June 18, 2008

To: Mike Dann, Small Woodland Owners Association of Maine
Doug Denico, Maine Forest Products Council
Wally Jakubas, IF&W, Mammal Group Leader
Dana Johnson, Sr., Maine Trappers Association
Gerry Lavigne, Sportsman's Alliance of Maine
Jon Olson, Maine Farm Bureau
Robert "Bos" Savage, Maine Audubon
Skip Trask, Maine Professional Guides Association

From: Commissioner R. Danny Martin

Re: Deer Predation Working Group

Thank you for agreeing to participate on the Deer Predation Working Group. Your interest in deer management and desire to be involved in this important effort is greatly appreciated. Allow me to provide a little background as to how and why the Deer Predation Working Group was formed and what specifically will be the group's charge.

Creation of the Northern and Eastern Deer Task Force

In response to the public's intense interest and concern for the condition and future of the deer herd in eastern and northern Maine, I established the Northern and Eastern Maine Deer Task Force in April, 2007 and charged the group to: 1] characterize the status and condition of the deer population in northern and eastern Maine; 2] review ways to enhance deer wintering habitat in northern and eastern Maine; 3] review coyote management policies; and 4] submit "workable" recommendations to me for my consideration.

The Northern and Eastern Maine Deer Task Force consisted of 11 members:

Matt Libby, chair	Maine Professional Guides Association
Gene Dumont, co-chair	IF&W, Wildlife Management Section Supervisor
Tom Doak	Small Woodland Owners' Association of Maine
Don Dudley	Maine Trapper's Association
Rich Hoppe	Inland Fisheries & Wildlife, regional biologist, Ashland
Lee Kantar	Inland Fisheries & Wildlife, deer biologist
Gerry Lavigne	Sportsman's Alliance of Maine
Tom Schaeffer	Inland Fisheries & Wildlife, regional biologist, Jonesboro
Brian Smith	Maine Bowhunters Association
Sally Stockwell	Maine Audubon Society
Pat Strauch	Maine Forest Products Council

In addition to the above, several individuals from the public and various employees of forest landowners / managers attended task force meetings.

LD 823, 'Resolve, To Create an Effective Deer Habitat Enhancement and Coyote Control Program.'

Throughout the first session of the 123rd Legislature, legislators considered the public frustration with low deer numbers and public concerns about coyote predation on deer. The Joint Standing Committee on Inland Fisheries & Wildlife initially prepared a Resolve directing the Dept. of Inland Fisheries and Wildlife "To Create an Effective Coyote Control Program." This Resolve directed the Commissioner of Inland Fisheries & Wildlife to review the Department's existing coyote control program and to establish methods of controlling the coyote population and to set goals to manage the coyote populations; it also required that the Commissioner report his findings and recommendations...to the Joint Standing Committee on Inland Fisheries & Wildlife by December 30, 2007. Based on the Commissioner's findings, the Joint Standing Committee on Inland Fisheries & Wildlife reserved the right to submit legislation related to the report to the Second Regular Session of the 123rd Legislature.

Upon further consideration of the several factors possibly contributing to low deer numbers in northern and eastern Maine, the Joint Standing Committee amended and expanded the scope of its initial Resolve:

LD 823, 'Resolve, To Create an Effective Deer Habitat Enhancement and Coyote Control Program.'

Sec. 1 Deer habitat enhancement and coyote control program. Resolved: That the Commissioner of Inland Fisheries & Wildlife shall establish a working group to review existing programs and efforts related to creating, enhancing and maintaining critical deer habitats in the State and reducing predation of deer by coyotes. In reviewing the programs and efforts, the working group shall look for ways to improve and increase wintering habitat for deer and for ways to increase the survivorship of deer on a year-round basis. The working group shall also establish methods of controlling coyote populations and set goals to manage the coyote populations; and be it further

Sec. 2 Report. Resolved: That the Commissioner of Inland Fisheries & Wildlife shall report the working group's findings, recommendations and draft legislation to the Joint Standing Committee on Inland Fisheries & Wildlife by December 30, 2007. The Joint Standing Committee on Inland Fisheries & Wildlife may submit legislation related to the report to the Second Regular Session of the 123rd Legislature.

The enactment of LD 823 occurred after I had established the Northern and Eastern Maine Deer Task Force; however, the Task Force and its members became the working group identified in LD 823.

The Northern and Eastern Maine Deer Task Force met eight times over the course of the spring, summer, and fall 2007, investing more than 30 hours in discussing the many factors likely contributing to low deer numbers and developing a series of recommended strategies to rebuild deer populations. In January 2008, my staff presented a final report to the Joint Standing Committee on Inland Fisheries and Wildlife constituting the Task Force's findings,

recommendations, and proposed legislation. A copy of the entire report is available on our website at http://mainegov-images.informe.org/ifw/wildlife/surveys_reports/pdfs/ne_deerreport.pdf .

LD 2288, ‘Resolve, To Create a Deer Predation Working Group.’

As a result of recommendations of the Northern and Eastern Maine Deer Task Force, the 123rd Legislature developed a resolve directing the Commissioner of Inland Fisheries and Wildlife “To Create a Deer Predation Working Group.”

Sec. 1 Deer predation working group. Resolved: That the Commissioner of Inland Fisheries and Wildlife shall establish a deer predation working group to review and to recommend necessary revisions to the Department of Inland Fisheries and Wildlife’s predation control policy. The 8-member working group must include representatives from the Department of Inland Fisheries and Wildlife, the University of Maine System, an organization that represents the needs of Maine’s forest products community, an organization that represents trappers, an organization that represents professional guides, an environmental organization, an organization that represents sportsmen and an organization that represents small woodlot owners in the State; and be it further

Sec. 2 Duties. Resolved: That the working group shall consider:

11. Methods of coyote control;
12. Tools and devices to be employed in predation control;
13. The protocol used by the Department of Inland Fisheries and Wildlife to determine when and where to deploy animal damage control agents;
14. The need and consequences of reducing the bear population in northern and eastern Maine to allow the deer population to recover; and
15. The appropriate protocol for accomplishing bear reductions, if any, as determined under subsection 4.

The policy and protocols developed by the working group must adequately consider and minimize impacts to nontarget species, especially threatened and endangered species; and be it further

Sec. 3 Report. Resolved: That the Commissioner of Inland Fisheries and Wildlife shall report the working group’s findings and recommendations and any recommended legislation to the joint standing committee of the Legislature having jurisdiction over inland fisheries and wildlife matters no later than January 5, 2009. That joint standing committee may submit legislation related to the report to the First Regular Session of the 124th Legislature.

House Amendment A to LD 2288 amended the 8-member working group to include a 9th member representing a statewide organization that represents farming.

The Deer Predation Working Group will consist of the following members:

Mike Dann	Small Woodland Owners Association of Maine
Doug Denico	Maine Forest Products Council
Wally Jakubas	IF&W, Mammal Group Leader
Dana Johnson, Sr.	Maine Trappers Association
Gerry Lavigne	Sportsman’s Alliance of Maine

Jon Olson
Robert "Bos" Savage
Skip Trask

Maine Farm Bureau
Maine Audubon
Maine Professional Guides Association

The University of Maine (the 9th invited member) has declined to participate.

I have asked Sandy Ritchie, IF&W's Habitat and Special Projects Biologist, to facilitate the process and Lee Kantar, IF&W's Deer and Moose Biologist to provide technical support.

As you are aware, your first meeting will occur on **Thursday, June 26, 2007** from 10:00 am-2:00 pm (lunch will be provided) in the Maine Department of Inland Fisheries and Wildlife's second floor conference room, 284 State Street, Augusta. I know summers are a difficult time for meetings with vacation plans and field seasons, but your input is important to this process, and I hope you can take time out from your busy schedules to participate. At this point, Sandy anticipates needing 2-3 meetings, but obviously that will depend on your progress. The timing and location of future meetings will be at the discretion of the group.

In preparation for the first meeting, Sandy has pulled together a number of background materials for you to review. These will not be discussed in any great detail; rather they are being provided as background and reference material.

- *Eastern Coyote Assessment – 1999* prepared by Walter Jakubas, June 1999
- *Eastern Coyote Management Issues and Concerns* raised by the 1999 Big Game Working Group
- *Eastern Coyote Management Goals and Objectives 200-2015* developed by the 1999 Big Game Working Group and adopted by the MDIFW Commissioner and Fish and Wildlife Advisory Council in February 2001
- *Feasibility Statements for the Eastern Coyote Goals and Objectives* prepared by Walter Jakubas, July 2001
- *Problems and Strategies for Eastern Coyote Management in Maine* prepared by Walter Jakubas, July 2001
- Report to the 117th Maine Legislature Pursuant to LD 793 *A Study of Eastern Coyotes and Their Impact on White-tailed Deer in Maine* prepared by Gerald Lavigne, December 1995
- *Black Bear Management Goals and Objectives 200-2015* developed by the 1999 Big Game Working Group and adopted by the MDIFW Commissioner and Fish and Wildlife Advisory Council in February 2001
- *1993 Downeast Deer Committee Report*
- MDIFW's *Administrative Policy Regarding Nuisance Wildlife*
- MDIFW's *Administrative Policy Regarding Coyote Snaring*

- Summary of Deer Task Force Meeting #2 at which coyote predation on deer was discussed
- Final recommendations from the Northern and Eastern Maine Deer Task Force

Please bring these materials with you to the first meeting.

Thank you again for serving on this working group.

Sincerely,

Roland D. Martin
Commissioner

pc: Ken Elowe, Director Bureau of Resource Management
Mark Stadler, Director Wildlife Division
Sandy Ritchie, Habitat Conservation and Special Projects Biologist
Lee Kantar, Deer and Moose Biologist

Appendix 2E

Deer Predation Working Group Member List

Name	Mailing Address	Phone	Email	Affiliation
Mike Dann	P.O. Box 836, Augusta, ME 04332-0836	626-0005	mike@swoam.org	Small Woodland Owners of Maine
Gerry Lavigne	1388 Elm Street, Boyd Lake, ME 04463-3132	943-2584	dunlatrfarm@yahoo.com	Sportsman's Alliance of Maine
Doug Denico	160 Longley Road, Madison, ME 04950	474-8309 (H), 242-2943 (C)	doug.denico@wildblue.net	Maine Forest Products Council
Jon Olson	4 Gabriel Drive, Suite 1, Augusta, ME 04330	622-4111	jolson@mainefarmbureau.com	Maine Farm Bureau
Dana Johnson, Sr.	115 Thompson Street, Wells, ME 04090	646-5467	cindydj@myexcel.com	Maine Trappers Association
Skip Trask	P.O. Box 65, East Winthrop, ME 04343	395-4840	strask@prexar.com	Maine Professional Guides Association
Robert "Bos" Savage	20 Gilsland Farm Road, Falmouth, ME 04105-6009	781-6180 x 228	bsavage@maineaudubon.org	Maine Audubon
Wally Jakubas	650 State Street, Bangor, ME 04401-5654	941-4471	walter.jakubas@maine.gov	Maine Department of Inland Fisheries and Wildlife

The University of Maine was invited to participate but declined.

Sandy Ritchie	41 SHS, 284 State Street, Augusta, ME 04333	287-5265	sandy.ritchie@maine.gov	MDIFW - Facilitator
Lee Kantar	650 State Street, Bangor, ME 04401-5654	941-4477	lee.kantar@maine.gov	MDIFW - Deer and Moose Biologist

Appendix 3

Background Materials Provided to Working Group

Appendix 3A	Eastern Coyote Assessment, 1999
Appendix 3B	Eastern Coyote Management Issues and Concerns
Appendix 3C	Eastern Coyote Management Goals and Objectives 2000-2015
Appendix 3D	Feasibility Statements for Eastern Coyote Goals and Objectives
Appendix 3E	Problems and Strategies for Eastern Coyote Management in Maine
Appendix 3F	Report to the 117 th Maine Legislature: A Study of Eastern Coyotes and Their Impact on White-tailed Deer in Maine
Appendix 3G	Bear Management Goals and Objectives
Appendix 3H	1993 Downeast Deer Committee Report
Appendix 3I	MDIFW's Administrative Policy Regarding Human/Wildlife Conflicts
Appendix 3J	MDIFW's Administrative Policy Regarding Coyote Snaring
Appendix 3K	Summary of Deer Task Force Meeting #2 at which coyote predation on deer was discussed
Appendix 3L	Final recommendations from the Northern and Eastern Maine Deer Task Force

Appendix 3A

Eastern Coyote Assessment 1999

By: Walter Jakubas
Department of Inland Fisheries and Wildlife
Bangor, ME
June, 1999

(View a copy of the assessment at
<http://www.maine.gov/ifw/wildlife/species/plans/mammals/easterncoyote/speciesassessment.pdf>)

Appendix 3B

Eastern Coyote Management Issues and Concerns

Raised by Working Group October 28, 1999

Population/Control

- Can we reduce the coyote population to such an extent that the deer population can increase downeast and in northern Maine?
- How far does one go to manipulate one species in favor of another?
- Poisoning, shooting, and trapping on a broad scale in other parts of the coyote's range has not worked.
- How would the presence of wolves affect the coyote population?
- Continue existing local control programs, at least until the effectiveness of these programs is determined.
- Need greater coyote control adjacent to deer wintering areas.
- It is not feasible to control the coyote population over large areas.
- Coyotes can play a useful role in controlling the deer population in areas where it is desirable to maintain or reduce the deer population to prevent or control the spread of Lyme disease.

Use

- Need to develop better information concerning hunting and trapping effort. Develop a voluntary reporting system. Eliminate tagging fees.
- Develop programs to promote coyote as a game species rather than a nuisance: allow hunting on Sundays, expand night hunting opportunities, and institute a September trapping season.

Appendix 3C

Eastern Coyote Management Goals and Objectives 2000 – 2015

*Adopted by the MDIFW Commissioner and Advisory Council
February 22, 2001*

For Wildlife Management Districts Where the Deer Population is at or Above Long-term Management Goals for Deer

Goal: Provide hunting and trapping opportunity for coyotes.

Objective: Maintain existing hunting and trapping opportunities while allowing the coyote population to fluctuate naturally.

For Wildlife Management Districts Where the Deer Population is Below Long-term Management Goals for Deer

Goal: Provide hunting and trapping opportunity for coyotes.

Objective: Implement local coyote control where coyote predation is suspected to be limiting long-term goals for deer; otherwise, allow the coyote population to fluctuate naturally.

Appendix 3D

Feasibility Statements for Eastern Coyote Goals and Objectives

Prepared by: Walter J. Jakubas
July 18, 2001

For Wildlife Management Districts Where the Deer Population is at or Above Long-term Management Goals for Deer

Goal: Provide hunting and trapping opportunity for coyotes.

Objective: Maintain existing hunting and trapping opportunities while allowing the coyote population to fluctuate naturally.

Desirability: Many hunters, trappers, and outdoor enthusiasts take advantage of the recreational opportunities associated with coyotes (e.g., hunting, trapping, nonconsumptive enjoyment). By maintaining existing hunting and trapping opportunities, we will provide consumptive users of coyotes considerable opportunity to pursue their interests. At the same time, the level of opportunity for nonconsumptive users to see and listen to coyotes will not be diminished. Coyotes readily compensate for normal hunting and trapping losses by increasing their reproductive rates. The promotion of coyote hunting and trapping opportunities may shift public attitudes from a focus on managing coyotes as nuisance animals, to managing them as game animals. Opposition to maintaining existing hunting and trapping opportunities may come from anti-hunting and trapping advocates. By allowing coyote populations to fluctuate naturally, coyotes will continue to function as important predators in Maine's ecological communities. However, some deer hunters may not be satisfied with "allowing the coyote population to fluctuate naturally".

Feasibility: Maintaining existing hunting and trapping opportunities in areas where the deer population is at or above its current management goal (primarily central and southern Maine) will be dependent on maintaining access to private lands for hunters and trappers. In addition, sufficient open-space will need to be maintained to allow these activities. The Department will need to increase public awareness on the detrimental effects of posted-land and promote the maintenance of open-space. Proportionally, fewer people are taking up hunting than in previous generations. By promoting different forms of coyote hunting (hunting with dogs, night hunting, and competitive hunts), the Department will help counteract any attrition in the number of coyote hunters. Recent passage of anti-trapping initiatives in other states (i.e., Arizona, Colorado, Massachusetts, and California) is indicative of a growing anti-trapping sentiment among the general public. Unless public education efforts on the positive aspects of trapping are increased in Maine, residents of this state may follow national trends and increasingly look unfavorably upon trapping.

Capability of Habitat: Coyote densities are not directly dependent on habitat conditions in the state. Rather, coyote densities are determined by space requirements and prey availability.

The Department's ability to achieve this objective will not be restricted by the capability of the habitat to support coyotes.

Possible Consequences: If current hunting and trapping opportunities are maintained for coyotes, those people who participate in these activities should be satisfied. This should help maintain license revenues and bring income to people who are directly or indirectly associated with these activities. Maintaining coyote hunting and trapping opportunities will let the public address nuisance problems caused by specific coyotes. However, it will be nearly impossible to reduce the coyote population for an extended period of time by using traditional hunting and trapping methods. Anti-hunting and trapping advocates may use coyote hunting and trapping as an example of why hunting and trapping, in general, should not be allowed. Coyote hunting often involves the use of dogs to chase coyotes, and coyotes are trapped using foothold traps. Hunting with dogs and the use of foothold traps have been targeted by these groups in the past. By allowing coyote populations to fluctuate naturally, coyotes will continue to function as important predators in Maine's ecological communities. However, some deer hunters may want the coyote population reduced.

For Wildlife Management Districts Where the Deer Population is Below Long-term Management Goals for Deer

Goal: Provide hunting and trapping opportunity for coyotes.

Objective: Implement local coyote control where coyote predation is suspected to be limiting long-term goals for deer; otherwise, allow the coyote population to fluctuate naturally.

Desirability: In northern and downeast Maine, coyote control has been a high profile agenda for some segments of the public for a number of years. Local coyote control may involve several forms of lethal coyote removal (i.e., trapping, hunting, and snaring). However, the Department has responded to calls for local coyote control primarily through a coyote-snaring program. Continuing coyote control will allow the public to have a hand in trying to alleviate predation pressure on deer. By allowing the public to participate in coyote control, proponents of coyote control may be satisfied that the Department is acting upon their request to relieve predation pressure on deer. However, it is not known whether the current snaring program, or other forms of coyote control, has any effect on increasing local or regional deer numbers. By continuing the coyote control program, the public may perceive the Department implicitly believes the control program has a strong biological basis, when in fact, the biological benefits of coyote control are unknown. Snaring is controversial because other wildlife or pets may be incidentally killed, and snares must be properly deployed to ensure that they humanely kill coyotes. Consequently, continuation of the snaring program may be undesirable, in that anti-trapping groups may use it to build public sentiment against snaring and trapping in general. In addition, the general public may become critical of the program if a high profile species, such as lynx or bobcat, is killed in a snare.

Feasibility: The implementation of local coyote control will depend on the willingness of the public to participate in coyote control, public attitudes towards the various forms of coyote control, and restrictions on coyote control where there is a likelihood of incidentally killing other wildlife (e.g., lynx, bobcat, and deer). Although some segments of the public are very vocal in support of the snaring program, the number of people willing to snare coyotes is not high. Currently, the Department contracts with experienced snarers to kill coyotes in areas where

deer predation is perceived to be a serious problem. Even with contract snarers, it will be difficult to find enough snarers to adequately cover all of the potential problem areas in downeast and northern Maine. The Department will need to encourage other forms of coyote control and continue to offer incentives and training for people wishing to snare coyotes. Conflicts may arise between people wanting to hunt coyotes with hounds, and snarers. For local coyote control to be effective, coyote control must be maintained in an area throughout the period when deer are most vulnerable to predation. Coyotes are highly mobile, and a significant segment of the coyote population is non-territorial. If local coyotes are removed from an area, dispersing coyotes can quickly fill the void. Coyote control must also be maintained year after year to decrease coyote predation rates on deer; otherwise, an area where a large number of coyotes were removed one winter, will be occupied by coyotes again the following winter. The potential public backlash from incidentally killing other wildlife or pets may be sufficient to threaten the snaring program. Currently, the Department is working with snarers to minimize the chance of a bobcat, lynx, eagle, or dispersing wolf being caught in a snare. These efforts need to continue to have a successful snaring program. It will also be essential for the Department to work with snarers to ensure that the most humane methods are used to snare coyotes. In addition, the public may become concerned about using snares or hunting with hounds to kill coyotes.

Capability of Habitat: Coyote densities are not directly dependent on habitat conditions in the state. Rather, coyote densities are determined by space requirements and prey availability. The Department's ability to achieve this objective will not be restricted by the capability of the habitat to support coyotes.

Possible Consequences: If coyote control is implemented, a segment of the public will feel that they are helping the local deer herd and reducing the number of coyotes. If adequate coyote control measures are maintained in an area, winter mortality rates for deer may decrease. However, the possibility exists that the removal of territorial coyotes may allow additional non-territorial coyotes into an area, and exacerbate the deer predation problem. The Department will need to address conflicts between user groups that are interested in controlling local coyote populations using different methods. In particular, hunters that use dogs to chase coyotes are concerned about their dogs getting caught in snares. Although areas in which snares are set are required to be clearly marked, a dog chasing a coyote may travel a long distance from where it initially encountered a coyote and be exposed to snares the hunter is not aware of. If the public finds certain methods of coyote control socially unacceptable, political pressure may develop to end or alter the Department's current coyote control program. If such opposition develops against coyote control, it may reflect negatively against the Department and decrease public acceptance for hunting or trapping, in general.

Appendix 3E

Problems and Strategies for Eastern Coyote Management in Maine

Prepared by: Walter J. Jakubas
July 18, 2001

Problem 1: Areas to trap and hunt coyote may decrease in the future, as a result of urban sprawl, population growth, and a desire by the public to post private land as being closed to these activities.

Strategy 1.1: Work with towns to ensure that sufficient "open-space" is maintained for traditional activities like hunting and trapping.

Strategy 1.2: Provide information to town planning boards, and to the general public, on the wildlife management problems that occur when too much land is closed to hunting and trapping.

Problem 2: The number of people trapping and hunting may decline in the future.

Strategy 2.1: Actively participate in programs that introduce hunting and trapping to children and the non-hunting/trapping public.

Problem 3: Some people have a negative perception of trapping, hunting with dogs, and snaring.

Strategy 3.1: Give and encourage public presentations that address hunting and trapping in today's society.

Strategy 3.2: Produce and distribute information on how to improve the selectivity and humaneness of snares and traps (e.g., Best Management Practices program for trapping).

Strategy 3.3: Inform the public about the steps the Department has taken to ensure that trapping and snaring is being done selectively and humanely as possible.

Strategy 3.4: Work cooperatively with Maine trappers and snarers to improve trapping and snaring techniques.

Problem 4: We do not know whether coyote control is effective in reducing deer winter mortality rates.

Strategy 4.1: Review existing documentation and interview wildlife biologists about the behavioral effects (i.e., immigration of other coyotes into vacated territories, establishment of new territories by nomadic coyotes, coyote densities in non-territorial situations, and changes in predation rates) of removing territorial coyotes.

Strategy 4.2: Conduct research that would document the effect of coyote control on deer mortality and recruitment, coyote population dynamics, and coyote social behavior.

Problem 5: Incidental wildlife may be killed or injured during coyote control operations.

Strategy 5.1: Continue producing and distributing information to people interested in coyote control that would help them avoid incidental captures and recognize when high profile, non-target species are in the area.

Strategy 5.2: Identify areas in the state where there is a high probability of killing non-target species that are of special concern to the Department, and construct special coyote control regulations for those areas.

Problem 6: People hunting coyotes with dogs are concerned about their dogs becoming caught in snares.

Strategy 6.1: Make available region-wide maps of where snares have been set, so houndsmen can evaluate the risks to their dogs.

Strategy 6.2: Designate areas in northern or downeast Maine where only dogs and hunting can be used for coyote control.

Appendix 3F

REPORT TO THE 117TH MAINE LEGISLATURE
PURSUANT TO LD 793 12 MRSA

A STUDY OF EASTERN COYOTES AND THEIR IMPACT
ON WHITE-TAILED DEER IN MAINE

By GERALD R. LAVIGNE
WILDLIFE BIOLOGIST
MAINE DEPARTMENT OF INLAND FISHERIES AND WILDLIFE
AUGUSTA, ME

DECEMBER 1995

EXECUTIVE SUMMARY

This report was compiled as mandated by LD 793, which required the Department of Inland Fisheries and Wildlife (IF&W) to “conduct a study to determine the impact that coyotes have on deer, and to propose recommendations to encourage the harvest of coyotes”.

The eastern coyote became established throughout Maine during the 1960's and 1970's, as part of an eastward population expansion from states and provinces to the west. Slightly larger than their western U.S. counterparts, coyotes inhabiting Maine average 30 to 45 lbs. as adults, with maximum weights of about 65 lbs. occurring rarely. Maine's coyote population is roughly 10,000 to 16,000; they average 11 to 18 per township at maximum density. Social organization among eastern coyotes centers around the adult breeding pair, their current-year offspring and, sporadically, other un-related associates. The adult breeding pair is monogamous, and they defend an annual home range averaging 20 mi² in Maine. Breeding takes place in February, 2-10 pups are born in April, and these young are tended in dens until early July. Reproductive rates are highly flexible among coyotes, depending on food availability, and/or availability of vacant breeding territories.

Prey selection by coyotes is opportunistic: they will consume whatever food is currently available, including carrion and fruits. White-tailed deer comprise a significant portion of coyote diets in Maine, particularly during winter and the spring denning period. Under the right circumstances, coyotes hunting in groups are adept at killing deer, including individual deer which are in good physical condition. Predation by coyotes ranks 2nd among mortality factors affecting adult deer annually in Maine; this accounts for nearly 30% of total annual deer losses. Coyote predation is also considered an important component of early losses among newborn fawns in summer.

Coyote predation on deer may be of sufficient magnitude in some parts of the state to contribute to population declines and/or impede deer population recovery. Effects of coyote predation are most damaging in parts of the state in which: 1. wintering habitat quality has severely reduced; 2. winter tend to be severe; and 3. alternate prey are less available. In northern, western and eastern sections of Maine, inadequate wintering habitat is the primary factor limiting deer populations. There, high predation rates by coyotes are the symptoms, not the cause of deer population problems. In central and southern sections of Maine, habitat quality is better, and we have been able to sustain adequate deer populations despite predation losses to coyotes. In all parts of Maine, allowable harvest to hunters has been reduced (using the Any-Deer permit system), in part, to accommodate losses to coyotes and a host of other mortality factors.

Maine offers the most liberal recreational trapping and hunting opportunities for coyote of any state/province in eastern North America. Coyotes may be hunter year-round; they may be night-hunted from January through April. There is a 7-day early trapping season, followed by a 64-day regular trapping season. Coyotes may be snared in January and February in Maine's unorganized towns under IF&W direction. Finally, IF&W may direct qualified cooperators to remove coyotes by trapping, snaring or hunting in any town as part of the Animal Damage Control (ADC) program.

Hunting, trapping and ADC activities account for less than 2,000 coyotes annually. Juvenile coyotes comprise the overwhelming majority of coyotes killed. This coyote harvest represents less than 12% of the coyote population annually. Real suppression of coyote populations would require removal of 70% of the coyote population annually. Because of rapid recolonization of vacated territories by dispersing juveniles, coyotes are capable of re-populating large areas in

less than two years. For these reasons, large scale control efforts (i.e. from a bounty) would fail, while depleting scarce financial resources.

Specific recommendations are offered relating to: 1. refining the focus of the Animal Damage Control Program; 2. focus on improvement of wintering habitat for deer; and 3. avoidance of bounty programs.

Introduction

This report was compiled as mandated by LD 793, which required the Department of Inland Fisheries and Wildlife (IF&W) to “conduct a study to determine the impact that coyotes have on deer, and to propose recommendations to encourage the harvest of coyotes”. Since this study was to be accomplished in less than six months, and since the 117th Maine Legislature did not appropriate funds for this work, we were not able to conduct new research on deer-coyote interactions. Rather, I relied on the body of research which already exists on this subject in Maine, and the northeastern U.S. and Canada to provide the basis for this report. As such, this report is instead, a synthesis of existing information on deer-coyote ecology as it currently relates to management of these species by IF&W. Supporting references appear as superscripted numbers in the text; reference sources appear in the Literature Cited section.

Coyote Origins, Distribution and Population

The eastern coyote (*Canis latrans*) currently inhabits all towns in Maine, except most offshore islands.¹ Rumors to the contrary, coyotes were not introduced to Maine by humans. They appeared in Maine during the late 1960's and early 1970's as part of a general range expansion across the northern U.S. and southern Canada which probably began in the 1920's.² It is noteworthy that coyotes colonized regions west of Maine prior to the late 1960's; that they expanded their range into eastern New Brunswick in the late 1970's, and then into Nova Scotia, Cape Breton Island, and even Newfoundland in the mid to late 1980's.³

Eastern coyotes are slightly larger than the western subspecies from which they originated. There is strong evidence that coyotes inter-bred with gray wolves (*Canis lupus*) in southern Canada as the coyote population gradually expanded eastward.⁴ Hence, the introduction of wolf genes resulted in larger overall size among eastern coyotes. Body weight of eastern coyotes ranges from 30 to 45 lbs among most adults in fall and winter; juveniles commonly range from 20 to 35 lbs at this time.⁵ Eastern coyotes rarely exceed 50 lbs; the record for Maine is about 65 lbs. By contrast, gray wolves range from 70 to 120 lbs as adults.⁶

Direct estimates of coyote population size are lacking for Maine or any other location in the northeast. Population estimates used by IF&W for planning purposes were calculated using assumptions for coyote home range size, litter size and dispersal rate derived from prior research, and extrapolated to all areas of the state.¹

As such, we estimate that 10,000 to 16,000 coyotes inhabit Maine, the latter number being the autumn peak. Given that there are 30,000 mi² of coyote habitat in Maine, this would represent a density of 3 to 5 coyotes per 10 sq. mi., or 11 to 18 within a typical Maine township.

IF&W does not utilize indices to detect regional or annual variations in coyote abundance. Nevertheless, opinions regarding the relative abundance of this species are commonly voiced by hunters and other outdoors enthusiasts. Whether or not these opinions have a basis in fact, we do not know. Monitoring the registered harvest of coyotes is a poor index to coyote

abundance, since harvest rate is largely influenced by factors which are unrelated to coyote abundance.

Coyote Social Organization and Reproduction

Coyotes social organization centers around family groups consisting of a mated pair of adults, and their offspring which are less than one year of age.⁷ The adult pair maintain and defend a home range which averages 15 to 20 sq. mi. in size. In addition to the family group, these home ranges may also be occupied by one to several juveniles (between one and two years old) which have dispersed earlier from their natal home range elsewhere. Dispersal in eastern coyotes commonly occurs in fall and winter; individual coyotes may disperse up to 400 miles from natal home ranges. A high dispersal rate among juvenile coyotes ensures that breeding territories vacated by the death of former occupants are quickly re-populated.

Coyotes do not form stable packs in the manner of gray wolves.⁷ However, coyotes may form aggregations beyond the adult pair and surviving pups in winter, particularly when they are hunting large prey, such as white-tailed deer (*Odocoileus virginianus*).⁸ This aspect of coyote behavior is poorly understood, and it merits careful research.

Coyotes are capable of breeding prior to one year of age, although few individuals do so.⁹ Established breeders are monogamous; most mating occurs in February, and pups are born in April after a gestation period of 63 days. Litter size among eastern coyotes is highly variable, ranging from 2 to 10 pups, and averaging 5 or 6. Age at first breeding, litter size and pup survival rate are each dependent on the availability of breeding territories and an adequate forage supply. Increasing the availability of food or reducing competition for breeding home ranges will both tend to increase the reproductive rate of coyotes. The former situation may occur during severe winters, when deer are more vulnerable to predation. The latter may occur when coyote mortality increases sufficiently to depopulate individual breeding territories.

Coyote pups are dependent on the breeding pair for all of their food requirements from birth until abandonment of dens in early summer.¹⁰ This places high demands on the adult pair to provide a large quantity of prey for the developing litter from mid-April until early July. For this reason, breeding pairs of coyotes tend to hunt larger prey items such as deer until pups are able to forage, at least in part, for themselves.¹¹

Coyote Harvest and Natural Mortality

Natural mortality among coyotes typically is high. Early losses among pups are dependent on the amount and quality of food brought in by the adult pair. Once they emerge from dens, pups and dispersing juveniles are vulnerable to a variety of hazards such as accidents, diseases, malnutrition, road-kill, and hunting/trapping. Many of these mortality factors are density dependent. For example, high losses to trapping may increase survival of juvenile coyotes in winter by reducing competition for relatively scarce prey. Hence, an increase in one form of coyote mortality may cause a compensatory reduction in mortality to other causes.

There is a relatively high turnover rate in Maine coyote populations.¹² First-year mortality among juveniles is roughly 40%, while that for older individuals is probably below 30%. Most coyotes in any given population are less than 3 years of age, although a rare few individuals may attain 10 to 12 years.¹³

In Maine, the eastern coyote is accorded the status of an exploited furbearer; they may be harvested by hunting, trapping and snaring. In regulating the various seasons on coyotes, IF&W seeks to maximize recreational hunting and trapping opportunities, while minimizing the risk of over-harvesting non-target species (e.g. bobcat, fisher, and fox), or protected species which are vulnerable to mortality (e.g. bald eagles).

Maine maintains the most liberal hunting and trapping seasons on coyote in the northeast. Coyotes may be hunted with or without dogs year-round, except for Sundays.¹⁴ We provide a 7-day early trapping season for coyote (and fox) in October. In addition, coyotes may be trapped during a 64-day land trapping season during October to December. During January and February, coyotes may be taken with body snares in Maine's unorganized towns by certified trappers who pursue this activity under the direction of IF&W personnel. We also maintain a night-hunting season on coyotes from January 1 to April 30 to facilitate coyote harvest by predator callers. Finally, IF&W maintains a pool of volunteer and paid agents under the auspices of the Animal Damage Control (ADC) program. ADC agents may be directed to remove specific coyotes from any location in the state, where coyotes are perceived to be causing excessive losses among wintering deer, or livestock (predominantly sheep).¹⁵

Coyotes taken by recreational hunting and trapping must be registered and tagged. Animals taken by ADC agents must be reported to IF&W for accounting purposes. During the past 15 years, the combined take of coyotes from hunting, trapping, and ADC work ranged from 944 to 1,600 coyotes. While it is likely that some coyotes are never tagged or reported, the total of man-induced mortalities of coyotes in Maine probably is less than 2,000 coyotes annually. This represents 12% of the peak autumn population of coyotes in Maine. It is noteworthy that 80% of the coyotes which are trapped in autumn are pups, and that the fall trapping seasons account for the lion's share of the total harvest of coyotes.¹³ Therefore, man-induced coyote losses in Maine selectively target the age class (juveniles) which is most likely to succumb to natural causes anyway. Conversely, that segment of the coyote population which is most responsible for successful reproduction (breeding pairs) appears to be less vulnerable to mortality from trapping in autumn (and possibly to winter snaring as well).¹³

Coyote Food Habits

Coyotes are primarily carnivores, although they readily incorporate soft mast such as blueberries, raspberries, chokecherries and apples into their diet, when available.¹⁶ Coyotes are adaptable and efficient predators; they also readily consume animal carrion and refuse where available. Coyotes consume a wider variety of foods in fragmented, human-dominated habitats than in heavily forested regions where the variety of potential prey species (and carrion) are greatly reduced.

In Maine, coyotes rely heavily on white-tailed deer and snowshoe hare (*Lepus americanus*) to satisfy their annual dietary requirements. Reliance on these two species appears to be greatest in parts of Maine dominated by industrial timberland (northern, western and eastern Maine).⁷ Relative vulnerability of deer and hare is related to coyote and deer mobility in snow. When snow is shallow, coyotes readily hunt and consume snowshoe hares. However, when coyote and deer mobility is hampered by deep snow, coyotes reduce hunting effort on hares and concentrate on deer. Based on studies of coyote scats, deer may comprise 50 to 80% of coyote diets in winter.¹⁶

Although coyotes will readily kill deer which are debilitated by old age, malnutrition and disease, coyotes are by no means restricted to killing the "misfits" in a deer population. In a 12-year

statewide study of winter losses in Maine,¹⁷ we found that only 15% of the 873 deer killed by coyotes in winter were severely malnourished. The majority of deer killed by coyotes were in good physical condition, based on the status of fat reserves. In addition, all age classes of deer, and both sexes, were nearly equally vulnerable to predation by coyotes.

Coyotes which hunt in groups of 2 or more individuals appear to be more successful at killing deer than coyotes which hunt alone.⁸ Hence, the aggregations of coyotes we sometimes observe in and near deer wintering areas may be an adaptation to hunting large prey. Whether or not an individual deer is vulnerable to predation by coyotes may depend less on its age, sex, or nutritional status, but rather on its ability to escape a chase involving 2 or more coyotes engaged in a coordinated pursuit.¹⁷ Therefore, factors which impede rapid escape would reduce a deer's odds for survival. Such factors include glare ice, deep snow, crusted snow, impeding vegetation (e.g. dense spruce-fir thickets which are difficult to traverse), and a lack of extensive escape trails in wintering areas. The latter factor may be particularly important. Deer wintering areas which have been extensively logged may pre-dispose deer to higher winter losses. Extensive mortality of spruce and balsam fir during the spruce-budworm epidemic during the 1970's and 1980's may have created similar conditions.¹⁸ Such extensive alterations in deer wintering habitat may: 1. reduce the area occupied by wintering deer; and 2. increase the energetic costs of making and maintaining escape trails (because snow depths are greater where the softwood canopy has been removed). Both of these effects would reduce the ability of deer to thwart pursuit by coyotes by increasing the likelihood of getting "bogged down" in deep snow. Finally, there may be an optimum density below which deer become increasingly vulnerable to predation by coyotes. Creation of extensive trail networks in a deer wintering area requires considerable energy expenditure by deer. Wintering areas populated by only a few deer lack well-maintained, extensive trail systems. Hence, deer in under-populated wintering areas may be more vulnerable to losses to coursing predators such as coyotes.¹⁹

During most snow-free times of the year, coyote dependence on deer decreases, while utilization of smaller prey, and fruits increases. Analysis of coyote scats in late summer and fall in Maine suggested deer comprised 20% to 30% of coyote diets.¹⁶ However, at least in the predominately forested parts of Maine, deer comprised up to 90% of diets consumed by breeding pairs of coyotes and their dependent pups during May and June.¹¹ This diet included newborn fawns and adult deer. Since little deer carrion is typically available in late spring and early summer, these deer largely represent predation losses. Little is known about the dynamics of coyote predation on deer during snow-free times of the year.

Our deer herd, which averaged 250,000 in early autumn, sustained a loss of 75,000 deer to all causes over the past year (1995). Based on an analysis of annual losses in the statewide deer herd during 1990-94,²⁰ predation by coyotes accounts for nearly 30% of annual losses among deer which are \geq 4 months of age. Of the 75,000 total mortality, about 22,000 deer were estimated to have been killed by coyotes. Among other leading causes of mortality were legal hunting (25,000 deer), unreported illegal hunting (12,500 deer), and road-kills (4,000 deer). Most losses to coyotes ($>$ 17,500 deer) likely occurred during winter.²⁰

In addition to predation on deer older than 4 months, coyotes may be an important source of mortality among newborn and very young fawns.¹¹ Each year during 1990-94, Maine's 95,000 white-tailed does produced at least 117,000 fawns. Yet, within 4 months, only 74,000 remained alive. Hence early fawn mortality averaged 37% or 43,000 fawns. The rate of early fawn mortality is higher today than was the case in the 1950's, prior to the establishment of coyotes in Maine. During 1990-94, about 20% (9,000 fawns) of the early losses of fawns less than 4 months old were attributable to coyote predation.²⁰

The above projections were compiled for the statewide population. The contribution of coyote predation relative to other factors likely varies regionally in Maine. Generally, coyote predation comprises a smaller fraction of total losses in central and southern regions where: 1. alternate prey and carrion is more readily available; 2. wintering habitat for deer is more abundant and of better quality; 3. less severe winters prevail; and 4. deer populations are higher, and hence are better able to absorb predation losses.

Impact of Coyotes on Deer Populations

Deer are subjected to a wide array of mortality factors. The list includes hunting (legal, illegal, and wounding loss), road-kill, other accidents (e.g. falls on ice, drowning, even lightning strikes!), predation (from coyotes, dogs, black bears, bobcats, even by foxes and fishers on newborn fawns), malnutrition, disease, and “old age” maladies.²⁰ No one of these loss factors can be considered apart from the rest when we evaluate the impact of mortality on the deer population.²¹ What matters is whether the sum of these various losses exceeds the number of fawns produced to replace older deer which have died (referred to as “recruitment”). During years when total losses exceeded recruitment, the herd declined. When recruitment exceeded adult losses, the herd grew. On those rare occasions when mortality and recruitment were balance, the herd stabilized.

When deer populations are held well below what the habitat will support, most causes of mortality in the herd are additive.²² In other words, an increase in one cause does not cause a decrease in another. When losses are additive, an increase in one cause results in an increase in total losses.

In contrast, when deer populations are at or near a maximum for that habitat, many forms of mortality are compensatory.²² That is, an increase in one mortality factor is matched by a decrease in another form of mortality. Deer maintained at the maximum limit of their summer food supply compete for scarce food resources. Such deer are thin, and a significant proportion of the herd is susceptible to malnutrition losses in winter. Under this scenario, an increase in deer mortality to hunting, for example, would cause a corresponding reduction in the number of deer which later die from malnutrition.

During the past 25 years, Maine’s deer herd has remained well below the carrying capacity of its summer habitat.²³ It follows that most losses, including deer losses to coyotes, were additive in nature. Since few adult deer in summer are demonstrably debilitated either from poor nutrition or from injury or disease, most such losses to coyotes during the snow-free time of the year are additive. In addition, the finding that total losses of young fawns in summer was higher after coyote establishment in Maine than previously, suggest that coyote predation on newborn fawns is an added drain on the herd’s ability to replace losses to adult deer.

Unfortunately, interpretation of winter deer losses to coyotes is not so clear-cut. On the surface of it, the finding that: 1. coyote predation was the leading cause of winter deer mortality during 1978-89; and 2. that most deer selected by coyotes were still in “good” physical condition suggests an additive loss to the herd.²⁴ In practice, however, this may only be partially true. Since 1970, the amount and quality of wintering habitat has declined markedly, particularly in northern, eastern and western Maine townships.¹⁹ While that habitat base was eroding (through logging and spruce-budworm mortality), predation by coyotes was the predominant mortality factor.²⁴ Regardless of the existence of coyotes in Maine, there is no question that the winter carrying capacity for deer in at least half of the state of Maine is much lower today than was the case 25 years ago. If there were no coyotes, winter losses to malnutrition would have gradually

increased wherever yarding habitat was degraded. Under this scenario, however, the herd may have taken many more years to adjust to its new (lower) carrying capacity.

There is little doubt that the establishment of coyotes has complicated deer management in Maine and the northeastern U.S. Depending on the magnitude of other herd losses, coyote predation can contribute to total losses which exceed the herd's ability to maintain stable populations. Then too, the additional mortality to the annual crop of newborn fawns caused by coyote predation today reduces the ability of the herd to rebound whenever high losses to adult deer occur.

It is likely that coyotes played a role in the deer population declines which occurred first in the 1970's in Quebec and Maine, and in the 1980's in New Brunswick and Nova Scotia. Also inherent in these herd declines were a reduction in winter habitat quality and an initial failure to reduce total losses of deer (primarily by regulating doe harvests) to levels which the herd could sustain. In Maine, the implementation of the Any-Deer permit system was designed to bring adult doe losses down to levels which each regional population could sustain.^{21,25} In the absence of coyotes, annual hunter harvests would certainly be higher, but deer populations in eastern, western and northern Maine would still have declined from levels we enjoyed 25 to 35 years ago. It is also important to note that, in any part of the state, severe winters will periodically inflict heavy winter losses on the herd. However, sustained predation by coyotes during subsequent winters may retard herd recovery back to the long-term carrying capacity of the wintering habitat.

Most locations in central and southern parts of Maine support sizeable deer populations while sustaining respectable deer harvests,²⁶ and while absorbing ongoing predation by coyotes. This is possible because: 1. deer populations remain high enough to readily absorb coyote losses; 2. doe harvests are tailored to balance out total losses vs. fawn production; 3. wintering habitat is relatively abundant and of good quality; and 4. severe winters are infrequent. If each of these conditions remain unchanged, IF&W can manage for an abundant, harvestable deer resource indefinitely. However, in the remainder of the state, major improvements in sustainable deer populations will only occur when, and if, the quantity and quality of wintering habitat increases.

Feasibility of Coyote Control

Since coyotes do impact deer populations to varying degrees in Maine, the idea of reducing coyote populations to increase deer is popular among deer hunters. Aside from ethical considerations surrounding the killing of one species to favor another, long-term suppression of coyote populations over large areas is not biologically achievable using traditional hunting and trapping techniques. The coyote evolved with a high and changeable reproductive rate as well as the ability to quickly fill vacant territories by dispersal of juveniles. Both are superb strategies which evolved among coyotes to counter the effects of high mortality rates.

Suppression of coyote populations in Maine would require an annual removal in excess of 70% of the peak autumn population.²⁷ In the first year, that would require a human-induced mortality of more than 7,000 to 11,000 coyotes.¹ This level of coyote removal has never been achieved in the open rangelands of the Western U.S., even when poisons were legal for coyote control. In heavily forested Maine, our annual harvests of <2,000 coyotes are a far cry from the harvest level which is required to cause coyote numbers to decline.

Major alterations in harvest strategies for coyote which increase IF&W's financial and manpower commitments, or which divert these resources from other necessary functions while also failing to provide long-term suppression of coyote populations, cannot reasonably be justified. Therefore, coyote bounty systems, however popular among some members of the public, cannot be recommended as a viable option to increase either the deer population or hunter harvests of deer in Maine.

It may, however, be feasible to intensively remove enough coyotes from small areas to temporarily reduce their impact on deer. In fact, some of our ADC cooperators who snare coyotes in winter may temporarily reduce coyote predation in some individual deer wintering areas. However, these small locations appear to be quickly repopulated with coyotes, since there are usually as many coyotes available for capture during the next yarding season. Therefore, any positive effects of coyote removal remains localized within a small areas and are temporary at best.

Recommendations

The following recommendations are offered for consideration by the Maine Legislature.

1. Inland Fisheries and Wildlife's Animal Damage Control (ADC) Program should be examined relative to removal of coyotes in winter. Currently, IF&W expends approximately 10-15% of its ADC annual budget directly on coyote control efforts. This includes contracts with trained ADC trappers that snare during winter months in deer yards, and hourly wages and mileage reimbursements for ADC trappers responding to local or temporary deer yard impacts by coyotes. These coyote control efforts now total approximately \$5,000 to \$15,000 annually, depending on the severity of the winter, the identification of areas with higher coyote impacts, and the availability of ADC trappers trained in the use of snares.

It may be desirable to focus ADC efforts away from areas where the deer population is already thriving or away from areas where depleted wintering habitat cannot support higher deer numbers. Coyote control efforts should also be avoided in areas where deer cannot be hunted. Therefore, efforts could be directed at areas most likely to see a benefit. Inland Fisheries and Wildlife is currently working towards redirecting the funded portion of our snaring program (as opposed to the opportunities for recreational snaring) towards areas where deer may benefit most from local, temporary reductions in coyote numbers.

2. Recognize that the real obstacle to attaining a higher deer population in more than half of the state is the declining quality and quantity of wintering habitat for deer. A real opportunity exists to improve long-term carrying capacity for deer if we can find an efficient way to protect and enhance a minimum of 1.5 million acres of deer wintering habitat, statewide.²⁸ Committing state funds and effort toward habitat conservation would, in the long-run, be far more cost-effective than engaging in widespread coyote killing campaigns.

Currently, the Wildlife Division is working with several large industrial landowners to plan, on a landscape or watershed basis, for maintaining and enhancing deer wintering cover. This approach allows a cooperative management philosophy that will provide for deer and other wildlife in areas many times larger than traditionally zoned deer yards.

IF&W will continue to expand its efforts for cooperative management arrangements on a landscape basis with all willing landowners.

3. Coyote boundaries are not a viable option for achieving higher deer populations. Unless a bounty system can remove more than 70% of the coyote population annually, and prevent rapid re-colonization from surrounding states and provinces, real suppression of coyote populations can never be achieved. Also, bounties are not directed and do not remove the animals that may be causing the greatest impact. Animal damage control efforts are always most effective when the specific problem animals are targeted.

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Appendix 3G

Black Bear Management Goals and Objectives 2000 – 2015

*Adopted by MDIFW Commissioner and Advisory Council
February 22, 2001*

Wildlife Management Districts 1-23 and 25-28⁵

Goal: Provide hunting, trapping and viewing opportunity for bears.

Objective 1: Stabilize the bear population by 2005 at no less than current (1999) levels, through annual hunting and trapping harvests.

Objective 2: Create information and education programs by 2002 that target specific audiences and promote traditional hunting and trapping methods as valid and preferred tools to manage black bear populations in Maine.

Objective 3: Create information and education programs by 2002 that target specific audiences and promote public tolerance of bears in Maine.

Wildlife Management District 29

Goal: Provide hunting, trapping and viewing opportunity for bears.

Objective 1: Increase the traditional hunting and trapping effort on bears within the existing season framework to reduce fawn mortality by 15% by (date - to be determined by IF&W).

Objective 2: Create information and education programs by 2002 that target specific audiences and promote traditional hunting and trapping methods as valid and preferred tools to manage black bear populations in Maine.

Objective 3: Create information and education programs by 2002 that target specific audiences and promote public tolerance of bears in Maine.

⁵ Wildlife Management Districts 24 and 30 have high human populations and fragmented forests that are largely unsuitable as bear habitat. Consequently, the public working group did not develop goals and objectives for these districts.

Appendix 3H

1993 Downeast Deer Committee Report

In 1993, the Maine Department of Inland Fisheries and Wildlife formed a committee to review options that would result in an increase of the deer population in DMD 17. Committee members included:

Sgt. Francis Reynolds
Sgt. Mike Marshall
Tom Schaeffer
Ken Elowe
Rich Dressler
Mark Stadler
Gerry Lavigne
Gary Donovan

The Downeast Deer Committee developed a number of recommendations and Regional Wildlife Biologist Tom Schaeffer summarizes the Downeast Deer Recommendations and their current (2007) status below:

Personnel needs:

Warden district vacancies were identified as an issue in DMD 17. Since that time, warden districts have generally been consistently filled without any significant number or persistent vacancies. Currently, one strategic district (Wesley) has been vacant since last fall. With regards to any special or focused "additional enforcement assistance during late summer and early fall," I am not aware of any provision that was implemented.

Habitat:

Habitat condition, particularly winter shelter, was considered to be the most important factor limiting any meaningful increase in deer numbers in Washington County. DMD 17 can be characterized as having expansive areas of regeneration with relatively small inclusions of isolated conifer shelter. Budworm, hemlock looper, accelerated wood harvesting has dramatically reduced the carrying capacity of DMD 17 to support the number of deer demanded by residents of this region. The following actions are recommended:

- a. *Identify historic deer wintering areas and work with landowners to develop watershed management plans that incorporate these areas. These plans should promote riparian travel corridors to available shelter and timber stand improvement techniques to accelerate growth of regenerated softwood stands.*

Region C Wildlife Division staff developed a Deer Habitat Management Proposal in March of 1995 (copy provided previously) which originally proposed four "Habitat Focus Areas" that were based on historical deer wintering area records, but were large enough to manage habitat for annual requirements of deer. Similar in origin to areas that have been recently managed under cooperative agreements with corporate landowners, the concept was broadened to cooperatively develop various silvicultural and other

management treatments (regulations, enforcement, habitat, predation, etc.) on defined areas as test/demonstration sites to determine if deer populations could be increased, and the influence of various factors on those changes. These proposals were taken to corporate landowners who eventually decided not to participate.

- b. *Promote herbaceous seeding of winter logging roads, log landings, stream crossings, etc. to provide high quality spring forage.*

Region C Wildlife Division staff have advocated for applied and appropriate herbaceous seeding with both private and corporate landowners including commercial blueberry growers and forest managers. Herbaceous seeding is considered SOP now for many land managers in controlling erosion and minimizing impacts from various land use practices. Regional wildlife staff continues to recommend seed mixtures that feature both palatable and nutritious forage where appropriate. Consultations and assistance have been provided to large scale efforts that include, as an example, Project Share road and stream crossing restoration efforts associated with downeast rivers, Downeast Lakes Land Trust timber management plan, Washington County Conservation Association (WCCA) efforts for habitat improvement projects along 80+ miles of new BHE powerline ROW, etc.

- c. *Encourage forest harvest operations in the winter, particularly if near deer wintering areas in order to make browse available to deer.*

This is nearly a standard recommendation for timber harvest operations in DWAs, and one that has been implemented both in recent management efforts both in currently zoned and historic DWAs where we have had management input.

- d. *Prioritize NRPA zoning (rating) of High and Moderate DWAs in organized towns in DMD 17.*

Annually developed plans for aerial surveys of DWAs have included WMDs 27 and 28, which comprise that which was formerly DMD 17. In most years, annual DWA aerial surveys have not materialized due to the lack of sustained and/or variable wintering conditions. A concerted effort was made during one winter that was characterized by continuous, restrictive conditions, and major watersheds in the DMD were flown to locate DWAs. It should be noted that there are other means by which DWAs in organized towns have either been NRPA rated, maintained, and/or managed including the environmental review process with either state and/or municipal regulatory authorities, review of Forest Operations Notifications and ensuing consultations with land owners/managers, and advocate that private, concerned stakeholders become active and participate in their town's comprehensive planning / ordinance development process that recognizes and incorporates deer wintering and other wildlife habitats into open space and other non- or low-developed areas.

- e. *Encourage the Refuge Manager at Moosehorn National Wildlife Refuge to implement a long-term DWA shelter management strategy in both the Edmunds and Baring Units.*

This topic was just recently the topic of communications between Moosehorn's resident wildlife biologist, MDIFW's deer biologist, and Region C Regional Wildlife Biologist. The Refuge is currently in the process of developing the 15-year segment of their "Comprehensive Conservation Plan," and are soliciting input by biologists from WRAS

and Region C. Both Lee Kantar and I have responded favorably and will be working with the Refuge to further develop management strategies on the Baring (20,000 acres) and Edmunds (9,000 acres) Units.

It should be noted that other efforts at maintaining and enhancing winter habitat have occurred during this period which were not specifically identified by the committee ... such as MDIF&W working with land management corporations overseeing investment based land holdings to alter harvest prescriptions on previously identified but currently unzoned (and lightly or non-populated) DWAs, as well as recent efforts to formalize cooperation between non-corporate landowners (State Department of Conservation, Passamaquoddy Tribe, Downeast Lakes Land Trust, MDIF&W, etc.) to prioritize riparian habitat management featuring, where site appropriate, contiguous softwood stands that provide winter shelter and travel corridor values on a landscape level.

Predation:

Continue to utilize the Animal Damage Control program and available funding to monitor and resolve winter predation on deer in DWAs

Until its suspension after the winter of 2003, the ADC program was actively implemented in Region C.

Statutes:

Recommendation by Warden Service to increase penalties for the illegal taking of does as a deterrent.

Legislation advocated by Washington County Conservation Association (WCCA), sponsored by Senator Raye, passed by 122nd Legislature and became effective in fall 2006 (limited to Washington County only).

Regulations:

- a. *Recommendation that archery regulations parallel firearm regulations in bucks only restrictions.*

This provision recently advocated by WCCA, as well as restricting youth day to bucks only, but no sponsored legislation to date.

- b. *Discussion on possible closing of season in DMD 17.*

This has been a topic of frequent discussion downeast for the past 20 years. Scientific theory would suggest that hunting bucks only should not limit reproductive capability of the deer herd, and that such an action would punish the licensed, law-abiding hunter to hopefully dampen or nearly eliminate illegal take of does. Practical application, at least suggested by experience in New Brunswick, would seem to suggest that deer population increase and possible recovery could very well be shortened by such an action.

Appendix 3I

MDIFW's Administrative Policy Regarding Human/Wildlife Conflicts (Policy J1.6)

Maine was built upon the strength of its natural resources, including wildlife, which continues to be the foundation of our states economy. The Department has developed an overall objective to manage wildlife populations for the use, benefit and enjoyment of Maine's citizens and visitors. We live in an environment constantly altered by human activities and natural factors causing wildlife populations to fluctuate and as these changes occur, human/wildlife conflicts develop.

It will be the policy of this Department to provide assistance in resolving human/wildlife conflicts following the procedures outlined in this policy. The Department will encourage the use of preventive measures to reduce the occurrence of human/wildlife conflicts and, when necessary, provide for the selective removal of wildlife that pose a significant threat to other wildlife, fisheries, human health, safety, or property.

Summary of Statutes and Regulations That Pertain to Human/Wildlife Conflicts

Title 12 MRSA §10053.8. Animal Damage Control. Establishes the function of animal damage control coordination and administration within the Bureau of Resource Management.

Title 12 MRSA §10105.1. (Commissioner's Powers). Describes the Commissioner's powers and responsibilities relating to the destruction of wildlife, the implementation of an animal damage control program and the employment of outside (non-department) agents. §10108.11 further specifies the use of snares and requires reimbursement from the Maine Department of Agriculture for service provided for agricultural interests.

Title 12 MRSA Chapter 921 / Animals Causing Damage or Nuisance. (See Attachment A) Specifies and limits an individual's right to kill wild animals to protect his property and his responsibility to report same to a game warden. Further specifies the Commissioner's authority (through his agents) in dealing with specific animals.

Title 12 MRSA §10104 – Rule-Making Power. Regulations are established by the Commissioner through the Administrative Procedures Act to establish season dates and other procedures relating to Title 12 MRSA.

Administrative and Operational Unit Responsibilities

Warden Service: Warden Service will assess nuisance wildlife complaints and resolve bona fide nuisance wildlife problems using standard procedures set forth in this policy

Wildlife Management Section (WMS): Wildlife Management Section personnel will provide coordination of operational activities and technical assistance to Warden Service, ADC agents and landowners in resolving human/wildlife conflicts. This will include coordination with the district wardens and other parties as necessary and through technical/educational materials via the Department's website and brochures. Site visits by regional wildlife

biologists are warranted when available information indicates significant waterfowl habitat is at risk.

Wildlife Resource Assessment Section (WRAS): Wildlife Resource Assessment personnel will monitor ADC activities as they relate to the species management goals and to the guidelines set forth in the species management systems; and they will provide technical assistance when by Department staff.

Fisheries Division: Fisheries Division personnel will provide technical assistance to the Warden Service and WMS by identifying high-value fishery resources that may be affected by beaver activity. There will also be a cooperative effort to identify drainages throughout each region that can be reasonably utilized for beaver releases.

Wildlife Management Section Supervisor: This position will have principal responsibility to oversee and facilitate animal damage control operations statewide by providing liaison between all parties to coordinate operational activities, training and development of instructional and educational materials. This position will administer the ADC service contracts and maintain the Department's ADC operational objectives.

USDA\Wildlife Services: The Department may enter into an agreement with USDA\Wildlife Services to carry out nuisance wildlife control operations in Maine. This work is coordinated through the regional Wildlife Division offices. USDA\Wildlife Services employs wildlife biologists and biological technicians to carry out wildlife damage management in respective wildlife regions. See current agreement at the Augusta office for details.

Animal Damage Control Agents: Qualified persons must hold a valid trapping license and be proficient in the use of traps relevant to their activity. Once the district warden and regional wildlife biologist are satisfied with a person's competency and understanding of the program, that person can register as an independent ADC agent for the activities in which he is proficient. Additional activities can be added upon approval of WMS supervisor.

ADC licenses must be renewed every two-years, during which time an agent must attend one regional training session and submit monthly ADC activity reports. Registered ADC agents are considered "Agents of the Commissioner" and can perform ADC work under the direction of a Department official.

Agents may request compensation for human/wildlife conflict work from landowners or complainants. ADC agents are NOT covered by State insurance because they are considered independent contractors (Per communication from Division of Risk Management, 5/20/03).

Rangers and park staff designated as ADC agents by director of the Baxter State Park Authority and the Allagash Wilderness Waterway must abide by the procedures set forth in this policy.

Permits and Reports

Depredation Permit: This form must be issued by a warden or regional wildlife biologist to any individual who is not an ADC agent (such as a land owner) before any nuisance wildlife may be killed (except as provided by §12401 and §12402). Depredation permits will be issued for individual instances only and not for re-occurring conflicts or multiple instances and they will be valid for up to 30 days.

Warden Service Record Management System database: This is the standard reporting system for Wardens to log all incidents and will continue to be used to document human/wildlife conflicts.

ADC Activity Report: This report is the standard reporting form for ADC agents. ADC agents are required to submit the activity report every month to the Wildlife Management Section Supervisor in Augusta or via the ADC activity report posted on the Department's website. The ADC activity reports will be compiled into a database that will be made available to the regional wildlife biologist, the district warden and the appropriate species specialist in WRAS.

Fur (fur tags) Registration: With the exception of Home and Garden Species, regional wildlife biologists or district wardens must give verbal or written permission to kill any wildlife under this policy. Agents may not keep any part of an animal killed under this policy, including castor and scent glands, unless possession is a condition of that permission. Wildlife taken that is subject to the tagging regulations, but is taken outside the regular season and is to be traded or possessed must be tagged within 10 days using the ADC code.

The Department recognizes that agents will occasionally "possess" wildlife taken during operational activities while en route to disposal sites.

State or federally threatened or endangered species may not be possessed unless appropriate state and federal permits have been acquired.

General Operating Procedures

Human/wildlife conflicts will be assessed by Department staff, ADC agents, or USDA Wildlife Services to determine if there is a bona fide problem, the nature of the problem and the appropriate solution. Consideration will be given to human health and safety, protection of domestic animals and property, significant habitats and applicable species management systems that may apply. Whenever possible, the complainant will be encouraged to resolve the problem with information and technical assistance developed by the Department and provided to the complainant by Department staff, ADC agents or USDA Wildlife Services.

Except as otherwise provided in Section §12401 and §12402 (see attachment A), human/wildlife conflicts will be addressed in the following order of descending priority. A person who violates a condition or restriction placed on an authorization granted under this policy invalidates that authorization and is subject to applicable laws.

1. Prevention and Extension - Landowners will be encouraged to take reasonable precautions to prevent human/wildlife conflicts, and when necessary, appropriate directions or information will be provided which will enable the property owner to both alleviate the problem and to avoid it in the future. If the complainant is not taking, or has not been willing to take, the recommended preventive measures, he will be advised of the possible consequences which may include:
 - a. withholding of further assistance by the Department,
 - b. denial of permits to kill potential problem animals, and
 - c. possible civil or criminal action for actions undertaken without approval.

Information or technical guidance will be provided and will include handouts, pamphlets and information on the Department's website to alleviate nuisance wildlife problems and to promote the positive aspects of wildlife.

2. Regulations - Many wildlife species are managed through regulation of harvests to maintain healthy individuals and population levels within a range that provides appropriate public use, while minimizing conflicts. Therefore, the extent of human/wildlife conflicts will be regularly (at least annually) discussed between the

Wildlife Division and Warden Service so that those problems will be considered in relationship to harvest regulations and management system goals.

3. Non-Lethal Control - When animals cause a problem and must be removed (except as provided in Sections §12401 and §12402), non-lethal measures must be considered first, except as noted with specific species. The feasibility and the biological and social consequences of non-lethal vs. lethal removal will be considered. It may be possible to alter the site conditions in such a way that the animal no longer poses a problem.

Relocation activities should avoid utilizing the same site for numerous releases of the same species. These situations could lead to locally high population levels that add stress and create conditions for disease transmission and/or added mortality.

4. Lethal Control - Lethal control is justified when the above procedures are not applicable, practical, or are prohibitively costly (except as otherwise provided by Sections §12401 and §12402).

Specific Human/Wildlife Conflict Procedures

- I. Home and Garden Species (H&G) - These animals include chipmunks, skunks, raccoons, foxes, weasel, woodchucks, porcupines, squirrels, bats, English sparrows, European sparrows, pigeons (rock doves) and European starlings that are causing damage to property, gardens and homes.

Species under federal jurisdiction, such as most birds are not H&G species and require a permit from federal authorities (see Migratory Bird Section).

1. Prevention and Extension - Most H&G species problems can be and should be resolved by the landowner or complainant with technical assistance provided by Department staff, ADC agents, or USDA Wildlife Services. Problems generally involve social aversions (people don't like a particular animal around), health hazards and minor garden/crop damage. Many problems can be resolved by dispelling unfounded fears, "proofing" of buildings, fencing property, improving sanitation, or use of repellents.

In addition to the Department's website and brochures, a variety of bulletins are available through the U.S. Fish and Wildlife Service and the University of Maine Cooperative Extension Service (County Office).

2. Regulation - The degree of nuisance problems will be considered in annual recommendations to the Commissioner for trapping regulations and season dates.
3. Non-lethal Removal - Homeowners may address the problem themselves, or they may employ the services of an ADC agent.

The Department limits the relocation of raccoons and skunks to a 5 mile radius around the capture site to minimize the artificial spread of rabies and recommends the same for fox. Because of the distance restrictions which may move the problem animal and risk of rabies to a neighbor, the Department further recommends lethal removal. Ideally, preventative measures will be taken and the animal released on site.

4. Lethal Removal - Sections §12401 and §12402 provide the conditions under which a landowner may take or kill wild animals. H&G complaints may be directly referred to USDA\Wildlife Services or ADC agents by regional dispatchers with no direct involvement of regional wildlife biologists or Warden Service and the monthly ADC activity report satisfies any permit requirements. **Two exceptions:** lethal removal of bats or foxes requires specific permission from a warden or regional wildlife biologist.

Bat complaints can generally be resolved by providing a means to exclude them from buildings. Any potential human exposures to bats should be immediately referred to the Maine Center for Disease Control. A leaflet is available from the USDA\Wildlife Services office and from regional wildlife biologists.

Agents may keep H&G animals killed under this policy, for their use. Species that normally require tagging such as fox, must be tagged within 10 days to be kept or sold.

- II. Beaver – Beaver are an important fur resource and they provide habitat benefits for many wildlife species. However, beaver can cause economic problems including flooding of structures and roads as well as impacts to important fisheries. Beaver populations and the wetland habitat associated with them, are protected and managed in an environmentally sound and responsible manner by the Department.

The priority for deciding on control measures as outlined below will depend on each situation related to long-term effectiveness, costs, significant waterfowl habitat values, native brook trout fisheries, important smelt spawning streams and Atlantic salmon habitat.

Department staff, ADC agents and USDA\Wildlife Services will advise landowners that neither lethal removal nor relocation of beaver resolve chronic beaver problems if site modifications are not also undertaken and landowners should consider one-time cost vs. repeated future actions.

1. Prevention and Extension - In many cases, if an adequate flow of water can be maintained, beaver do not pose a problem. By modifying the drainage to control an acceptable water level, beaver may continue to occupy an area. Fencing and/or installation of pipes to provide adequate flows through the dam will be encouraged by the Department, USDA\Wildlife Services and ADC agents by demonstrating or educating landowners how to prevent beaver from causing a flooding problem (managing water levels). With annual maintenance this is the most effective, long-term means of reducing most nuisance complaints. Providing adequate water flow may not resolve fish passage problems and these problems may require additional solutions.

Modification or removal of beaver dams as authorized by a regional wildlife biologist or game warden, as long as (Natural Resources Protection Act, 38 MRSA §480-Q.21):

- a. Efforts are made to minimize erosion of soil and fill material from disturbed areas into a protected natural resource;
- b. Efforts are made to minimize alteration of undisturbed portions of a wetland or water body; and
- c. Wheeled or tracked equipment is operated in the water only for the purpose of crossing a water body to facilitate removal of the beaver dam. Where

practicable, wheeled or tracked equipment may cross a water body only on a rock, gravel or ledge bottom. This exemption includes the draining of a freshwater wetland resulting from removal of a beaver dam. It does not include removal of a beaver house.

Beaver flooded woodlands or other timberland may be drained by the removal of a dam after consultation with the regional wildlife biologist or warden. Approval will be given when timber is at imminent risk of loss, after waterfowl young-of-the-year have fledged and when the flowage is less than two years old.

Regional wildlife biologists may (at the expense of regional budgets) deploy ADC agents or USDA\Wildlife Services agents for site modifications as needed for the management of significant waterfowl and wading bird habitats.

2. Regulation - Regulation of the length and timing of beaver trapping seasons can be used to encourage beaver removals. The WRAS will incorporate this data into the beaver management system for future management decisions.
3. Non-Lethal Removal - ADC agents or USDA\Wildlife Services must obtain specific permission from a regional wildlife biologist or warden to relocate beaver. To make this determination the regional wildlife biologist will consider circumstances, existing beaver densities, relocation distances and other significant resource impacts, including impacts to waterfowl habitat, native brook trout fisheries, important smelt spawning streams and Atlantic salmon habitat.

Relocation of beaver prior to July 1st may be lethal for young-of-the-year and should be avoided. Relocation of beaver just prior to ice-up is considered lethal and is also to be avoided. Except in emergency situations, no nuisance beaver will be removed within 30 days of the opening of the beaver trapping season in that area. A list of locations where beaver have been removed within 30 days of the opening of the beaver-trapping season will be maintained at appropriate regional office. (This provision is intended to maintain a greater level of beaver trapping opportunity.)

4. Lethal Removal - ADC agents or USDA\Wildlife Services must obtain specific permission from a warden or regional wildlife biologist for lethal removal of beaver. Lethal removal of beaver should be justified by circumstances, existing beaver densities and other significant resource impacts, including impacts to waterfowl habitat, native brook trout fisheries, important smelt spawning streams and Atlantic salmon habitat.

Title 12 MRSA §12404.2 states:

*A person may not take or kill beaver under sections §12401 and §12402. The Commissioner may cause **agents of the Department** to take nuisance beaver at any time. (A landowner, forester, etc., can not take or kill beaver without a depredation permit.)*

If a nuisance beaver activity is deemed to pose an **imminent public health or safety** threat, then Department staff, a deployed ADC agent or a deployed USDA\Wildlife Services agent will resolve the problem via trap and transfer or lethal removal at regional expense. Water quality impacts at public water supplies ARE NOT an imminent health issue and those problems should be referred to ADC agents or USDA\Wildlife Services for a Cooperative Service Agreement at the water company's or municipalities expense.

III. Bear - Bears are an important wildlife resource and big-game species with a high public profile. The Department manages bear populations for hunting and viewing; bear are protected for much of the year.

1. Prevention and Extension - Department staff, ADC agents and USDA\Wildlife Services, will advise landowners to take preventative measures. The following list includes examples of preventive measures that may apply;
 - a. Install an electric fence to protect vulnerable property,
 - b. Locate beehives in the immediate vicinity of crops and away from prime bear habitat (forest edges) or travel ways,
 - c. Secure garbage dumpsters and remove attractants such as open trash barrels,
 - e. Regularly remove and properly dispose of household garbage, clean-up bird feeding areas in the spring and regularly clean grills,
 - f. Use deterrents such as spraying trash containers with ammonia or cayenne pepper, and
 - g. Do not feed bears.

(NOTE: USDA\Wildlife Services makes electric fencing available to landowners with bear problems. The program leases the fencing to the landowner for 5 years with an annual cost 1/5 the cost of materials. After 5 payments, the landowner owns the fence.)

2. Regulation – The degree of nuisance bear problems will be considered in annual recommendations to the Commissioner for hunting regulations and season dates.
3. Non-Lethal Removal – If a problem still exists and if appropriate, the regional wildlife biologist or district warden may deploy an ADC agent to run or chase the bear(s) with hounds at no cost to the landowner or the Department.

ADC agents or USDA\Wildlife Services must obtain specific permission from a warden or regional wildlife biologist for relocation of a bear. Relocation will be at the landowner's expense and the following conditions will apply;

- a. Bears shall be relocated to predetermined locations, consistent with species management objectives, representing the least chance for further problems. Each regional wildlife biologist will maintain a list of potential sites. Adult bears must be relocated no less than 60 air miles; cubs and yearlings no less than 40 air miles,
 - b. Every effort should be made to minimize moving sows with cubs. In those cases where relocation is the only alternative, every effort should be taken to move them together,
 - c. USDA\Wildlife Services may utilize Aldrich foot snares and must be set no more than 300 feet from a beehive or other damaged site,
 - d. Foothold traps are not permitted, and
 - e. Immobilization will not be permitted within 30 days of the start of the hunting or trapping season. Refer to policies J1.4 and J1.5.
4. Lethal Removal – Sections §12401 and §12402 provide the conditions under which a landowner may take or kill wild animals. If a problem still exists, the regional

biologist or warden will refer the landowner to USDA\Wildlife Services or an ADC agent at the landowner's expense, or issue a depredation permit to the landowner. ADC agents or USDA\Wildlife Services must obtain specific permission from a warden or regional wildlife biologist for lethal removal of bear. Shooting is the only permitted method of lethal removal.

- a. Except as provided by Sections §12401 and §12402, the property owner or permittee may legally possess the bear when properly reported.
- b. Disposal of a dispatched bear will be agreed upon in advance, which may include: carcass disposal, possession by landowner, possession by agent, or donation to food pantry.
- c. The ADC agent or USDA\Wildlife Services will notify the regional wildlife biologist once a bear has been killed and complete the appropriate reporting form. A depredation permit is not necessary for an ADC agent or USDA\Wildlife Services, but the Activity Report is required.
- d. Title 12 MRSA §12404.B provides for the issuance of a permit to beekeepers to protect their hives from bears (for the use of Aldrich foot snares an ADC agent or USDA\Wildlife Services must be utilized);
 - i. The bee hives must be located in the immediate vicinity of a cultivated crop, commercial blueberry land, or orchard,
 - ii. The provisions of the permit will apply only during the time of year when the involved crops are subject to pollination,
 - iii. Each permit must be obtained in writing from a regional wildlife biologist,
 - iv. Each permit will designate the town(s) where the bee keeper will have Aldrich foot snares set,
 - v. If the beekeeper employs another person to set Aldrich foot snares, the person setting the traps must be named in the permit, and
 - vi. Any bear taken must be reported to a warden as required by law.

If a nuisance bear is deemed to pose an **imminent public health or safety** threat, then Department staff, a deployed ADC agent, or a deployed USDA\Wildlife Services agent will resolve the problem via trap and transfer or lethal control at the Department's expense.

IV. Deer and Moose – Deer and moose are part of the Maine landscape and should be accepted as a necessary factor in any agricultural or forestry endeavor. When deer and moose become locally abundant, browsing of garden crops, orchards and ornamentals may cause substantial losses.

1. Prevention and Extension – Department staff, ADC agents and USDA\Wildlife Services will advise landowners to take preventative measures such as deterrents, repellents, or fencing as appropriate. Information concerning the prevention of damage will be available at Regional Headquarters, the Department's website and provided upon request to landowners. Electric fencing will be the method of choice to be encouraged by the Department for all situations requiring substantial reduction of deer browse losses.

Vegetable crop farmers, nurseries, fruit growers and others should be referred to the USDA\Wildlife Services for information and assistance with fencing. USDA\Wildlife Services makes electric fencing available to landowners with deer problems. The program leases the fencing to the landowner for 5 years with an annual payment 1/5 the cost of materials. After 5 payments, the landowner owns the fence.

2. Regulation – The degree of nuisance deer and moose problems will be considered in developing annual recommendations to the Commissioner for harvest regulations.
3. Non-Lethal Removal – Live trapping and removal of deer is generally not an effective means of resolving deer depredation problems. Refer to prevention and extension. Title 12 MRSA §12404.5 applies. Immobilization will not be utilized 30 days prior to the start of that species hunting season. Refer to Department policies J1.4 and J1.5
4. Lethal removal – Sections §12401 and §12402 provide the conditions under which a landowner may take or kill wild animals.
 - a. If a problem still exists and **the WMD is AT OR ABOVE population goals**, the regional biologist or warden will refer the landowner to USDA\Wildlife Services or an ADC agent at the landowner's expense, or issue a depredation permit to the landowner.
 - b. If a problem still exists and **the WMD is BELOW the population goals and objectives**, (if warranted and at the discretion of the regional wildlife biologist), provide additional on-site technical assistance in an attempt to resolve the problem and avoid lethal removal. If this is not warranted, or if the problem still exists, refer the landowner to USDA\Wildlife Services or to an ADC agent for lethal control at the landowner's expense, or issue a depredation permit to the landowner.

If a nuisance deer or moose is deemed to pose an **imminent public health or safety** threat, then Department staff, a deployed ADC agent or a deployed USDA\Wildlife Services agent will resolve the problem via lethal removal at regional expense.

Section §10401 describes enforcement officials with full powers of game wardens which allows them to dispatch moose that frequent high traffic highways (Turnpike, I-95, etc.) deemed to pose a safety hazard and are considered an imminent safety hazard.

- V. Wild Turkey – Turkeys are an important wildlife resource and big-game species managed for hunting and viewing. Landowner conflicts have been most prevalent among dairy farms. These include turkeys feeding and defecating on exposed bunker-stored corn silage, and to a lesser extent, direct crop damage. There is no scientific evidence to suggest that soiled silage causes any risk to cows, nor are any known wildlife diseases linked to wild turkeys and trenched-stored silage.

1. Prevention and Extension – Wild turkeys, which are highly visible due to their large size and diurnal behavior, are often blamed for damage actually caused by raccoons, rodents, deer, or crows. It is important that crop depredation be verified before measures to control turkeys are implemented.

Presence of wild turkeys should not be tolerated at sites where they pose a problem and early deterrence is most effective. The following list includes examples of preventative measures that may apply:

- a. Chase turkeys away from problem sites, such as a bunker silo, barn, strawberry patch, etc. Hazing with dogs may also be an effective deterrent. The longer wild turkeys are allowed to feed on silage or visit barns, the more difficult it will be to prevent it in the future.
 - b. Keep bunker silos covered (tarps, plastic), out of view of turkeys.
 - c. Place waste silage (spillage) at a location away from bunker.
 - d. Locate spoiled silage dumpsites away from silos and barns so as to attract turkeys away from these food sources
 - e. Establish manure storage piles early in the winter at sites away from silage silos.
 - f. Use electric fencing, regular fencing, such as plastic snow fencing and/or mylar strips around silos, gardens, row crops and fruit trees.
 - g. Use deterrents, such as screamers, scare-a-ways, cracker shells, predator silhouettes, etc.
 - h. Encourage local National Wildlife Turkey Federation chapters or other volunteers to work with farmers to plant winter food plots.
2. Regulations – Spring hunting (toms only) will not appreciably reduce turkey populations or solve nuisance turkey problems. Turkey mortality resulting from fall hunting (either sex) has the potential to reduce turkey populations on a larger scale (e.g., Wildlife Management District) -- if management goals dictate a population reduction. However, a reduced wild turkey population would not necessarily reduce or eliminate turkey nuisance concerns, as they tend to be local in nature.
3. Non-Lethal Removal by Live Capture and Relocation – If a problem still exists, at the discretion of the regional wildlife biologist, provide additional on-site technical assistance, including trap and transfer, to the landowner in an attempt to resolve the problem and avoid killing wild turkeys.

This method serves a dual purpose in both removing problem birds and frightening remaining members of the flock from returning for a while. This method has limited application as a widespread solution and will be used only if it helps the Department meet population enhancement/distribution objectives.

4. Lethal Removal – Sections §12401 and §12402 provide the conditions under which a landowner may take or kill wild animals.

Limited use of lethal removal with a depredation permit may be very effective in discouraging turkey flocks from returning to silos or barns especially in conjunction with the use of deterrents.

If prior options are not successful and at the direction of the regional wildlife biologist, refer the landowner to USDA\Wildlife Services or an ADC agent for lethal control at the landowner's expense or issue a depredation permit to the landowner.

If a nuisance wild turkey is deemed to pose an imminent public health or safety threat, then Department staff, an ADC agent or an USDA\Wildlife Services agent will resolve the problem via lethal control at the Department's expense.

- VI. Coyotes – Sections §12401 and §12402 provide the conditions under which a landowner may take or kill wild animals. Department wardens and regional wildlife biologists will investigate reports of coyote depredation and make a reasonable effort to prevent

agricultural losses by deploying USDA\Wildlife Services or ADC agents to remove specific coyotes known or suspected of causing the damage. **Coyote snaring to minimize impacts to deer is addressed in the Coyote Snaring Policy, J1.7**

1. Prevention and Extension – Landowners will first be advised about the advantages of implementing preventative measures, such as those below; however, the landowners will be authorized to implement lethal removal without first implementing preventative measures if he or she so chooses.
 - a. Maintain fencing and/or install an electric fence around pastures.
 - b. Use guard dogs, llamas or donkeys to protect flocks. USDA\Wildlife Services can provide information on the use of guard animals.
 - c. Provide lighted night security.
 - d. Take special precautions during lambing or calving.
 - e. Remove and bury deeply any farm carcasses per Department of Agriculture guidelines.
2. Regulation – The degree of nuisance coyote problems will be considered in developing annual recommendations to the Commissioner for harvest regulations.
3. Non-Lethal Removal – Live trapping and removal of coyotes is generally not an effective means of resolving coyote problems.
4. Lethal Removal –The regional wildlife biologist or district warden will refer the landowner to USDA\Wildlife Services or ADC agent for lethal removal at the landowner's expense, or issue a depredation permit. The following methods and procedures apply.
 - a. Trapping, using foothold traps and hunting using predator calls or over baits are the methods to be used for coyote removal.
 - b. The use of cable restraints is restricted to ADC agents, USDA\Wildlife Services, or Department officials with specific certification and knowledge in their use.

If a nuisance coyote is deemed to pose an **imminent public health or safety** threat, then Department staff, a deployed ADC agent or a deployed USDA\Wildlife Services agent will resolve the problem via lethal removal at Department expense.

See *also*: Snaring Policy, J1.7.

VII. Migratory Birds, Non-Game and Other Wildlife under Federal Jurisdiction - Migratory waterfowl, cormorants, woodpeckers, most other birds including black birds, song birds, eagles and other threatened and endangered species are among those under federal jurisdiction. No permit is necessary to harass migratory birds, with the exception of bald and golden eagles and threatened and endangered species. Migratory bird nests that contain no eggs or chicks are not protected under the Migratory Bird Treaty Act.

Two different federal agencies are involved:

USDA, APHIS USDA\Wildlife Services is administered by the USDA\Wildlife Services State Director, 79 Leighton Road, Suite 12, Augusta, ME. 04330; phone (207) 622-8263. Damage relative to geese and other migratory birds **will** be directed to USDA\Wildlife Services.

The USFWS is responsible for federal laws regarding wildlife, including their trade, protection, endangered species status and law enforcement. Direct contact with USFWS is through: Division of Law Enforcement, Craig Brook Hatchery, 306 Hatchery Road, E. Orland, ME 04431; phone (207) 469-6701x211.

Waterfowl and Geese

1. Prevention and Extension – Through contacts with individuals, lake associations and municipalities, work to eliminate or discourage feeding of waterfowl. This can be done with pamphlets, signs, posters, timely newspaper articles and ordinances. Eliminate human-provided food sources. Grass is a strong attraction for geese and complainants should reduce or eliminate the amount of grass near the shoreline by minimizing or eliminating mowing and fertilizing.
 - a. Hazing – Dogs, shell-crackers, pistol-fired screamers, etc can be effective if used regularly throughout the spring and summer months.
 - b. Mylar tape – inexpensive and effective for small areas during molt and young-rearing.
 - c. Planting shrubs in staggered rows near the shoreline.
 - d. Deterrence sprays for grass – effective for small areas.
 - e. Dead goose decoys.
2. Regulation – The degree of nuisance waterfowl problems will be considered in developing annual recommendations to the Commissioner for harvest regulations. Potentially repeal laws that closed nearby water bodies to waterfowl hunting or liberalize September goose season.
3. Non-Lethal Removal – Limited effectiveness. Damage relative to geese and other migratory birds **will** be directed to USDA\Wildlife Services.
4. Lethal Removal – Damage relative to geese and other migratory birds **will** be directed to USDA\Wildlife Services.

Migratory Birds

The USDA\Wildlife Services State Director should be contacted for completion of a Wildlife Services Form 37 (Migratory Bird Damage Project Report). With his recommendation a permit can then be obtained from the Regional Director for the USFWS through the migratory bird office in Hadley, MA. Note: all permits involving federally protected species are issued by USFWS. English sparrows, European starlings and other non-native birds are not protected under the Migratory Bird Treaty Act (50 CFR §10.13). Blackbirds and crows may be taken under USFWS Depredation Order (50 CFR §21.43). Most of these species also require state permits.

Gulls, woodpeckers, blackbirds, crows and many other birds may cause agricultural, safety and health problems. The USDA\Wildlife Services-State Director should be notified and requires state sign-off for lethal removal.

When questions arise pertaining to migratory birds that are not contained in this policy, they should be referred to the USDA\Wildlife Services-Director and/or the WMS supervisor.

VIII. Diseased or Injured Animals. Singular incidents of sick or injured wildlife usually do not warrant extraordinary measures by the Department. However, indications of disease

epidemics will be brought to the attention of the regional wildlife biologists who will then contact the Wildlife Management Section Supervisor. Based upon discussions among the WMS Supervisor, the Wildlife Resource Assessment Section Supervisor and the Wildlife Division Director, the Department may, if necessary, contact the National Wildlife Disease Laboratory or Maine Center for Disease Control for advice.

Rabies is one of the most virulent forms of wildlife diseases in Maine. Rabies may be contracted by any mammal but is especially prevalent in raccoons, fox, skunks and bats. The Public Health Laboratory of the Maine Center for Disease Control is responsible for testing and monitoring the occurrence of rabies contacts with humans in Maine. Regional offices have procedures to transport specimens for testing.

When humans or domestic animals have had contact with a wild mammal whose behavior or appearance suggests that it is rabid, any affected person should be referred to a doctor, a veterinarian should be contacted regarding an exposed domestic animal and the wild animal should be:

1. Killed, if not already dead, in such a way that the skull (brain tissue) is not damaged.
2. Handled with plastic or rubber gloves.
3. Decapitate head and place the head in a plastic bag.
4. Refrigerated or cooled (NOT FROZEN) by packing in ice.
5. Delivered to the Public Health Laboratory, 221 State Street, Augusta, ME. 04333; telephone 287-2727.

Injured or orphaned wildlife may be taken to a licensed wildlife rehabilitator by citizens after contacting a warden or wildlife biologist. A list of currently licensed rehabilitators will be maintained on the Department's website.

ATTACHMENT A

Title 12: CONSERVATION

Part 13: INLAND FISHERIES AND WILDLIFE HEADING: PL 2003, c. 414, Pt. A, §2 (new); Pt. D, §7 (aff); c. 614, §9 (aff)

Subpart 4: FISH AND WILDLIFE HEADING: PL 2003, c. 414, Pt. A, §2 (new); Pt. D, §7 (aff); c. 614, §9 (aff)

Chapter 921: WILDLIFE CAUSING DAMAGE OR NUISANCE HEADING: PL 2003, c. 414, Pt. A, §2 (new); Pt. D, §7 (aff); c. 614, §9 (aff)

§12401. Attacking domestic animals or destroying property

Except as provided in sections 12402 and 12404, a person may lawfully kill, or cause to be killed, any wild animal or wild turkey, night or day, found in the act of attacking, worrying or wounding that person's domestic animals or domestic birds or destroying that person's property. A person who kills a wild animal or wild turkey by authority of this section shall report the incident to the Maine Warden Service as provided in section 12402, subsections 3 and 4. [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]

SECTION HISTORY

2003, c. 414, §A2 (NEW). 2003, c. 414, §D7 (AFF). 2003, c. 614, §9 (AFF).

§12402. Damage to crops or orchards

- 1. Permission to kill nuisance animals or wild turkeys.** Except as provided in section 12404, the cultivator, owner, mortgagee or keeper of any orchard or growing crop, except all types of grasses, clover and grain fields, may take or kill wild animals or wild turkeys night or day when the wild animals or wild turkeys are located within the orchard or crop where substantial damage caused by the wild animal or wild turkey to the orchard or crop is occurring. For purposes of this section, corn is not considered grain. [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]
- 2. Employment of agents.** When a person wants to employ someone outside of that person's immediate family to take or kill wild animals or wild turkeys, that person shall contact a game warden. If the warden is satisfied that substantial damage is occurring, the warden may arrange for a department agent to alleviate the damage; when an agent is not available, the warden may authorize a person who is knowledgeable and can perform the work in a reasonable, safe and proficient manner. Permission to take or kill wild animals or wild turkeys may not be granted to a person whose license to hunt has been revoked or suspended, who is an habitual violator as defined in section 10605, subsection 1 or who has been convicted of night hunting within the past 5 years. [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]
- 3. Report to Maine Warden Service; dressing of carcass.** The person by whom or under whose direction the wild animal or wild turkey is wounded, taken or killed under this section shall:
 - A. Within 12 hours, report all the facts relative to the act to the Maine Warden Service, stating the time and place of the wounding, taking or killing; and [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]

B. In all cases of deer, bear, moose or wild turkey, immediately and properly dress the carcass or carcasses and care for the meat. When the meat is being distributed to recipients authorized under the Hunters for the Hungry Program established in section 10108, subsection 8, the person shall inform the department within 24 hours that the meat is ready to be picked up. [2007, c. 198, §1 (AMD).]

4. Warden's certificate. A game warden shall investigate an incident under this section as soon as possible and, if the game warden is satisfied that the wild animal or wild turkey was taken as provided in this section, give the person who killed the wild animal or wild turkey a certificate that entitles the cultivator, owner, mortgagee or keeper of the orchard or growing crop to own the carcass or carcasses, which may be possessed and consumed only within the immediate family of the cultivator, owner, mortgagee or keeper of the orchard or growing crop, or, in accordance with the labeling requirements for possession of deer, bear, moose or wild turkey, to transfer possession of those wild animals or wild turkeys to another person. Any excess carcasses after the first 2 carcasses of bear, moose or wild turkey or after the first 3 carcasses of deer killed or taken under subsection 1 or 2 must be distributed to recipients authorized through the Hunters for the Hungry Program established in section 10108, subsection 8 or as otherwise authorized by the game warden. [2007, c. 198, §2 (AMD).]

5. Failure to report wounding, taking or killing of nuisance wild animal or to properly care for carcass. A person may not:

A. Wound, take or kill a wild animal under section 12401 or this section unless the person reports all the facts relative to the incident to the Maine Warden Service within 12 hours; or [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]

B. Kill a deer, bear or moose pursuant to section 12401 or this section unless the person immediately and properly dresses the carcass and cares for the meat to prevent spoilage. [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]

A person who violates this subsection commits a Class E crime.

[2003, c. 655, Pt. B, §239 (AMD); 2003, c. 614, §9 (AFF); 2003, c. 655, Pt. B, §422 (AFF).]

SECTION HISTORY

2003, c. 414, §A2 (NEW). 2003, c. 655, §B239 (AMD). 2003, c. 414, §D7 (AFF). 2003, c. 614, §9 (AFF). 2003, c. 655, §B422 (AFF). 2007, c. 198, §§1, 2 (AMD).

§12403. Damage to motor vehicles by wild animals or wild birds

1. Claims. The State is not liable for any claims for damages to a motor vehicle by a wild animal or wild bird. [2003, c. 655, Pt. B, §240 (AMD); 2003, c. 614, §9 (AFF); 2003, c. 655, Pt. B, §422 (AFF).]

2. Accidental collisions involving deer, moose, bear or wild turkey. This subsection applies to accidental collisions involving deer, moose, bear or wild turkey.

A. The operator or owner having knowledge of a motor vehicle that has been involved in an accidental collision with a deer, moose, bear or wild turkey shall, by the quickest means, report the accident to a law enforcement officer. [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]

B. The officer shall investigate an accident reported under paragraph A and, if the officer finds that the motor vehicle has sustained apparent damage as the result of the collision, shall give a certificate that entitles the person to the ownership of the carcass. The person may then take possession and immediately remove the entire carcass from the scene of the collision. [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]

C. A person entitled to ownership of a deer, moose or bear carcass under paragraph B may not take possession of or remove any portion of the carcass without taking possession of or removing the entire carcass from the scene of the collision. [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]

3. Penalties. The following penalties apply to violations of this section.

A. A person who fails to report an accident in accordance with subsection 2, paragraph A or who removes a portion of a carcass in violation of subsection 2, paragraph C commits a civil violation for which a fine of not less than \$100 nor more than \$500 may be adjudged. [2003, c. 655, Pt. B, §241 (AMD); 2003, c. 614, §9 (AFF); 2003, c. 655, Pt. B, §422 (AFF).]

A-1. A person who fails to report an accident in accordance with subsection 2, paragraph A or removes a portion of a carcass in violation of subsection 2, paragraph C after having been adjudicated as having committed 3 or more civil violations under this Part within the previous 5-year period commits a Class E crime. [2003, c. 655, Pt. B, §241 (NEW); 2003, c. 655, Pt. B, §422 (AFF).]

B. [2003, c. 552, §15 (AFF); 2003, c. 614, §9 (AFF); 2003, c. 655, Pt. C, §§2, 6 (AFF); 2003, c. 552, §13 (RP).]

[2003, c. 655, Pt. B, §241 (AMD); 2003, c. 614, §9 (AFF); 2003, c. 655, Pt. B, §422 (AFF) .]

SECTION HISTORY

2003, c. 414, §A2 (NEW). 2003, c. 552, §13 (AMD). 2003, c. 655, §§B240,241 (AMD).

2003, c. 414, §D7 (AFF). 2003, c. 552, §15 (AFF). 2003, c. 614, §9 (AFF). 2003, c. 655, §§B422,C2,6 (AFF).

§12404. Specific animals

1. Bear. This subsection applies to the taking or killing of bear found doing damage.

A. Section 12402 does not prohibit the taking or killing of bear found doing damage to blueberry land. [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]

B. The commissioner may issue a permit to any licensed beekeeper, or to a person entrusted with the custody of the beehives of a licensed beekeeper, authorizing that person to protect beehives from damage by bear. [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]

C. The commissioner may suspend the game laws relating to bears in such restricted localities and for such periods of time as the commissioner finds it advisable to relieve excessive damage being done by bears to sweet corn or other crops. [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]

D. The commissioner may suspend subsection 6 for the purpose of allowing dogs to be used in hunting and killing bears, providing the dogs are under the personal supervision of the owner at all times, for such periods of time as the commissioner finds it advisable. [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]

2. Beaver. A person may not take or kill beaver under sections 12401 and 12402. The commissioner may cause agents of the department to take nuisance beaver at any time.

A person who violates this subsection commits a Class E crime.

[2003, c. 655, Pt. B, §242 (AMD); 2003, c. 614, §9 (AFF); 2003, c. 655, Pt. B, §422 (AFF) .]

3. Birds. A person may not take or kill wild birds, with the exception of rock doves and wild turkeys under sections 12401 and 12402.

A person who violates this subsection commits a Class E crime. [2003, c. 655, Pt. B, §242 (AMD); 2003, c. 614, §9 (AFF); 2003, c. 655, Pt. B, §422 (AFF) .]

- 4. Coyotes.** The commissioner may cause department personnel to take coyotes at any time and in any manner that the commissioner may prescribe.
[2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]
- 5. Deer.** This subsection applies to the control of nuisance deer in orchards and crops.
- A. Whenever deer are doing damage to orchards and crops, including legumes, but excepting grass, the department shall furnish to the owner or agent of the orchards and crops suitable repellants without cost to the owner or agent. The commissioner may follow other good conservation practices to alleviate the damage. [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]
- B. Whenever the commissioner determines it impossible to keep deer from doing damage to young orchards, the commissioner may enter into an agreement with the owner of a young orchard in which the department assumes 1/2 the cost of fencing the orchard. [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]
[2003, c. 655, Pt. B, §242 (AMD); 2003, c. 614, §9 (AFF); 2003, c. 655, Pt. B, §422 (AFF).]
- 6. Dogs.** This subsection applies to nuisance dogs.
- A. A game warden may kill a dog outside the enclosure or immediate care of its owner or keeper when the game warden finds that dog:
- (1) Chasing, killing, wounding or pursuing a moose or deer at any time;
 - (2) Chasing, killing, wounding or pursuing any other wild animal in closed season; or
 - (3) Worrying, wounding or killing a domestic animal, livestock or poultry. [2003, c. 655, Pt. B, §243 (AMD); 2003, c. 614, §9 (AFF); 2003, c. 655, Pt. B, §422 (AFF).]
- B. An owner of domestic animals, livestock or poultry, a member of the owner's family or a person to whom is entrusted the custody of domestic livestock or poultry may kill any dog killing or attacking the domestic animals, livestock or poultry. [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]
- C. A person having evidence of a dog chasing, killing, wounding or pursuing moose or deer or any other wild animal in closed season may present that evidence to the commissioner or any game warden.
- (1) The commissioner or game warden shall give notice in writing to the owner or keeper of the dog, stating the acts committed by the dog.
 - (2) After the owner or keeper of the dog has received written notice that the dog has committed any act prohibited by paragraphs E-1, E-2, F and G, anyone may kill the dog when it is found committing any of those prohibited acts. [2003, c. 655, Pt. B, §243 (AMD); 2003, c. 614, §9 (AFF); 2003, c. 655, Pt. B, §422 (AFF).]
- D. [2003, c. 552, §15 (AFF); 2003, c. 614, §9 (AFF); 2003, c. 655, Pt. C, §§2, 6 (AFF); 2003, c. 552, §14 (RP).]
- E. [2003, c. 614, §9 (AFF); 2003, c. 655, Pt. B, §422 (AFF); 2003, c. 655, Pt. B, §243 (RP).]
- E-1. Except as provided in paragraphs F and G, the owner or keeper of a dog is in violation of this paragraph if that owner's or keeper's bird dog, retrieving dog or hound dog is found killing or wounding a moose, deer or wild turkey during a period in which it is lawful to train dogs, as provided for in section 12051, subsection 1, while the dog is at a licensed dog training area or at a licensed trial for retrieving dogs.
- (1) A person who violates this paragraph commits a civil violation for which a fine of not less than \$100 nor more than \$500 may be adjudged.
 - (2) A person who violates this paragraph after having been adjudicated as having committed 3 or more civil violations under this Part within the previous 5-year period commits a Class E crime. [2003, c. 655, Pt. B, §243 (NEW); 2003, c. 655, Pt. B, §422 (AFF).]
- E-2. Except as provided in paragraphs F and G, the owner or keeper of a dog is in violation of this paragraph if that owner or keeper has been notified under paragraph C and that

owner or keeper permits any dog mentioned in the notice to leave the owner's or keeper's immediate control.

(1) A person who violates this paragraph commits a civil violation for which a fine of not less than \$100 nor more than \$500 may be adjudged.

(2) A person who violates this paragraph after having been adjudicated as having committed 3 or more civil violations under this Part within the previous 5-year period commits a Class E crime. [2003, c. 655, Pt. B, §243 (NEW); 2003, c. 655, Pt. B, §422 (AFF).]

F. The owner or keeper of a dog is in violation of this paragraph if that owner's or keeper's dog is found chasing or pursuing a moose, deer or wild turkey at any time or any other wild animal in closed season.

(1) A person who violates this paragraph commits a civil violation for which a fine of not less than \$100 nor more than \$500 may be adjudged.

(2) A person who violates this paragraph after having been adjudicated as having committed 3 or more civil violations under this Part within the previous 5-year period commits a Class E crime. [2003, c. 655, Pt. B, §243 (AMD); 2003, c. 614, §9 (AFF); 2003, c. 655, Pt. B, §422 (AFF).]

G. The owner or keeper of a dog is in violation of this paragraph if that owner's or keeper's dog is found killing or wounding a moose, deer or wild turkey at any time or any other wild animal in closed season.

(1) A person who violates this paragraph commits a civil violation for which a fine of not less than \$500 nor more than \$1,000 may be adjudged.

(2) A person who violates this paragraph after having been adjudicated as having committed 3 or more civil violations under this Part within the previous 5-year period commits a Class E crime. [2005, c. 477, §14 (AMD).]

7. Muskrat. The commissioner may declare an open season on muskrats that are polluting water supplies or damaging property if the owner makes a written complaint to that effect to the commissioner. [2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]

8. Raccoons. The commissioner may suspend the game laws relating to raccoons in such restricted localities and for such periods of time as the commissioner finds it advisable to relieve excessive damage being done by raccoons to sweet corn or other crops. The commissioner may suspend subsection 6 for the purpose of allowing dogs to be used in hunting and killing raccoons, providing the dogs are under the personal supervision of the owner at all times, for such periods of time as the commissioner finds it advisable.

[2003, c. 414, Pt. A, §2 (NEW); 2003, c. 614, §9 (AFF).]

SECTION HISTORY

2003, c. 414, §A2 (NEW). 2003, c. 552, §14 (AMD). 2003, c. 655, §§B242,243 (AMD). 2003, c. 414, §D7 (AFF). 2003, c. 552, §15 (AFF). 2003, c. 614, §9 (AFF). 2003, c. 655, §§B422,C2,6 (AFF). 2005, c. 477, §14 (AMD).

Appendix 3J

MDIFW's Administrative Policy Regarding Coyote Snaring (DP – E.5 (b) December 8, 2004)

Authorization to Snare: The use of snares to capture coyotes is provided by ***Title 12 MRSA §7013, sub-§7-A, §7035 ¶B, and §7504 ¶4*** and is guided by this Administrative Policy. This policy also establishes the Department's responsibilities and the procedures to be followed by Animal Damage Control Cooperators while performing coyote control duties as Agents of the Department.

Goals and Objectives, developed with public input and contained within the Department's strategic plans for white-tailed deer and coyote will guide the deployment of coyote snarers to deer wintering areas where 1) Maine's deer population is below population objectives and 2) deer have not exceeded the carrying capacity of the wintering area. The identification of specific Wildlife Management Districts (WMDs) where the Department will deploy snarers is a dynamic, clearly defined management system process that occurs annually. The Department will use a "management system" process to identify these WMDs. The flowchart in Appendix B describes the decision-making process the Department uses to identify wildlife management districts where coyote snarers may be deployed.

Snare Certification: The Department requires persons to become certified to use snares to capture coyotes and will only grant certification to a person who 1) has possessed a valid Maine trapping license for at least 3 years, 2) has demonstrated the ability to catch coyotes with foot-hold traps, 3) is registered as an Animal Damage Control (ADC) Cooperator and 4) attends a Department approved coyote snaring training meeting.

Initial Snare Certification is conditional. A person with a conditional certification must accompany a fully certified snarer for at least 2 days to gain snaring experience and skill before operating alone.

Full Certification is subject to a determination by the members of the regional snaring committee that the person has:

1. satisfactorily completed a snaring training seminar within the last two years;
2. completed a minimum of two seasons of active snaring as a "conditional" snarer;
3. a history of successfully capturing a minimum of 10 coyotes by snare during the above period; and
4. demonstrated compliance with the Department's Coyote Snaring Policy and all fish and wildlife laws and rules.

Full certification upgrades will be considered by the full regional snaring committee.

Grandfather Clause: Snarers, who have held full certification prior to December 1, 2001, and have remained active during that time, will retain their full certification until such time that certification is lapsed or revoked by the Commissioner.

Expiration: Snaring certification will be valid for a period indicated on a certification card, or unless or until otherwise lapsed or revoked by the Commissioner.

Revocation: The Commissioner may revoke snaring certification for failure to comply with any of the provisions or conditions of this policy, or upon determination that the criteria for certification are no longer being met.

Deployment: Deployment is an explicit action by the Department, through the Regional Wildlife Biologist, that authorizes a snarer to operate in a given area, or under special conditions, including the authority for fully certified snarers to snare in organized townships, to perform coyote control duties in areas where predation by coyotes is posing a threat to deer or other wildlife. Snaring will only be conducted in areas where coyote kills have been documented or in areas with a history of depredation.

Regional staff will provide the necessary support to snarers (logistical support such as deployment, identification of lynx areas, etc.), participate in training programs, and carry out deployment and certification procedures according to this policy

Snarers should take the opportunity early in the season to discuss deployment into areas with a history of depredation with the Regional Wildlife Biologists and reach agreement on preliminary plans to operate in those areas.

Financial Compensation: The Department will pay [\$7.00/hour and \$0.32/mile] any snarer if he/she requests it. Any provision to pay for coyote snaring must be coordinated with the Regional Wildlife Biologist and is subject to availability of funds and priority of needs. The snarer, even when being paid, may retain the pelts of coyotes taken.

Training: All snaring agents must attend a coyote snaring training seminar once every two years. Seminars provide a review of the Department's snaring policy and procedures, new technology, and snaring techniques. The Regional Biologist or other approved trainer may provide individual training.

Each of 5 regions will hold at least one annual seminar with an opportunity to learn basic snaring techniques.

The Department will conduct at least 3 daytime seminars annually for those individuals who need or want more intensive "hands-on" training in the use of snares. Training seminars will be held between September and early December, and will be located as follows:

- Region C – Alternate between Princeton area and Jonesboro area
- Region D – Alternate between Farmington and Rangeley (daytime)
- Region E - Jackman or Greenville
- Region F - Milo (daytime)
- Region G- Alternate between Ashland and Fort Kent (daytime)

The certification/re-certification seminars will fully explain and update the Department's snaring policy and proper snaring procedures, new devices, technology, techniques, and any issues relating to snaring (such as lynx or eagle issues) and will satisfy the requirements to be certified or re-certified to snare coyotes. **The daytime training seminars will include the above information as well as more extensive opportunity to set snares and learn techniques.**

Additional seminars will be held if need or interest is sufficient. Respective regions will conduct training at the request of at least 10 individuals.

MDIFW will provide a high level of training using the most experienced and skilled snarers available. Maine snarers will be used whenever available at regional training sessions. The Department will continue to invite experts from Maine and other jurisdictions to provide new ideas and insights, or as new technology becomes available. MDIFW will continue to emphasize the importance of procedures and rules and provide statewide opportunity for hands-on training. Instructors for all sessions will include fully certified snarers selected from the roster and will be paid \$50.00 plus .32 /mile.

In addition to the snarers on the Department roster, notice of seminars and meetings will be sent to the Sportsman's Alliance of Maine, Maine Trappers Association, The Maine Sportsman, and the Department's Bureau of Information & Education for broader public dissemination. Snarers will be encouraged to bring or invite others to attend. These notifications will include a general statement of the purpose and objectives of coyote snaring.

Advisory Committee: Each of the Department's wildlife regions will establish a 3-member snaring advisory committee for the purpose of coordinating snaring activities in that region, resolving disputes that may arise, and assisting in the certification of snarers. The regional wildlife biologist, a game warden, and a representative of the snaring/trapping community will serve on the committee. **This committee will meet at least annually.**

Each of the regional biologists will organize at least one annual meeting between wildlife staff and district wardens to review and discuss the coyote snaring policy and to ensure a common understanding of its intent.

Whenever the regional biologist or the regional snaring committee cannot resolve an issue relating to coyote snaring, it will be brought to the attention of the Wildlife Management Section Supervisor, who will seek a resolution of the matter in concert with Warden Service and the Wildlife Division Director, or others as necessary.

Conflicts with Houndsmen: Regional biologists and wardens will make every effort to facilitate communication between snarers and houndsmen who are active in the same area. The Department also expects houndsmen and snarers to communicate with one another on their own. In special circumstances the Department may deploy houndsmen and, if requested, pay them for removing coyotes.

GENERAL SNARING PROVISIONS

1. Department Notification: All snarers must be deployed by the Regional Wildlife Biologist before setting snares. Snarers must provide an accurate description of the location of their snaring activity to the respective Regional Wildlife Headquarters on the first business day following the setting of snares. [Appendix A consists of a map showing the Department's regional wildlife office and their telephone numbers.] The Regional Wildlife Biologist will maintain a regional map depicting the location of all snaring activity within his/her region.

2. Posting: The area containing snares must be adequately posted. The snarer will place signs at all access points, such as car, jeep, skidder, snowmobile, or ATV roads or trails, cross-country ski or hiking trails, or other obvious travel ways. Signs must contain the warning that snares are being used, and identify the name and telephone number of the snarer. The snarer will remove all signs from an area upon completion of snaring.

3. Tending: Snares must be tended every 3 days. Under special circumstances, the tend provision may be extended to 7 days, but only with written approval from the Regional Wildlife Biologist, if:

1. the snarer is fully certified
2. the snarer is operating at a remote site, or otherwise has difficult access to snare sites
3. prevailing snow conditions and weather patterns do not increase the chances of catching non-targets or particularly vulnerable species.

In the case of any dispute regarding the tending provision, the snarer may seek a resolution from the regional advisory snaring committee.

4. Snare Tags: Snares must be identified by a metal tag in the same manner as required for trap tagging.

5. Snare Number: There is no limit on the number of snares or areas in which they may set.

6. Accountability: Snaring agents are responsible for adhering to the provisions of this coyote snaring policy. Snarers must be able to account for all of their snares at any time and must be available to Department staff or the Commissioner's designee to inspect their lines as they are tended.

7. Time Limit: The use of snares is limited to the months of December, January, February, and March..

8. Reporting: All coyotes and non-target species taken by snare must be reported at least monthly on Department ADC reporting forms. Monthly reports must be received at the appropriate regional wildlife headquarters [see Appendix A] as follows: snaring activities for the month of December must be reported to the Department by 10 January; for January by 10 February; for February by 10 March; and for March by 10 April. A snarer will lose his/her certification for failure to submit complete and accurate reports as scheduled.

9. Non-Target Protection: No snares may be set so as to unreasonably jeopardize any non-target species. Any non-target species captured alive must be released immediately; dead non-targets must be submitted to the Department. All non-targets must be reported to the Department on the monthly Department ADC reporting forms.

10. Approved Devices: Snares -- Only cable snares may be used. Snare cable must have a 7x7 or 1x19 wire wrap configuration. Each snare must be fitted with a cam-lock, a 50-pound (or greater) compression spring, and a 110-pound (or lesser) breakaway device. Foothold traps -- Foothold traps may be used if approved by the Regional Wildlife Biologist but require 24-hour tending.

11. Use of Bait: To avoid or minimize the risk to bald eagles and other non-target species, the use of bait is prohibited.

12. Lynx Avoidance: All snarers are to be deployed by Regional Wildlife Biologists. No snares may be set so as to unreasonably jeopardize any non-target species. Lynx occur in several areas of Maine, specifically within WMDs 1-9 and 13. They are of concern because of their low

numbers and federal threatened status. Therefore, to monitor snaring activity that may affect lynx, the following criteria will be used:

1. **Lynx Study Area:** The Department's lynx study area in the Round Pond vicinity of Aroostook County (see map) is closed to snaring. If coyote predation on deer occurs in the lynx study area, Regional Wildlife Biologists will direct hunters into the area to 1) hunt coyotes over bait or 2) run coyotes with dogs and shoot them during the chase.
2. **“High Probability of Lynx Occurrence” Areas:** The Department maintains a database of lynx areas, consisting of circles of 5 miles radius that are centered on documented records of lynx occurrence, which have been reported within the last 10 years. Clustered sightings are more indicative of higher probability occurrence than are single, isolated sightings. Clusters of adjacent five-mile lynx circles are aggregated (with the assistance of the USFWS) into so-called “high probability of lynx occurrence” areas.
 - Within these areas, MDIFW will verify that coyote predation is causing a risk to deer by 1) documenting the level of deer mortality, 2) considering the quality and size of the deer wintering area affected, 3) the winter severity, and 4) the time of the winter.
 - If MDIFW concludes that coyote predation is causing a high risk to wintering deer, it will first attempt to alleviate the problem using alternative measures, such as hunting coyotes over bait.
 - If MDIFW determines that alternatives will not be effective, limited snaring will be used – however, prior to setting snares, MDIFW will conduct snow-tracking surveys in and around the problem area. If lynx are not present, MDIFW will deploy snarers into the affected deer wintering area. Nevertheless, MDIFW will still implement the lynx-avoidance measures set forth within this policy. MDIFW will further require that all snares be tended every 72 hours, with no waivers or exceptions. (Since coyote snares are designed to be killing devices, a 24-hour tend provision is not a realistic means to “release” non-targets, and 24-hour tending renders snaring impossible in the remote forestlands of Maine.)
3. **“Lower Probability of Lynx Occurrence” Areas:** Isolated five-mile lynx circles do not warrant the same management considerations (lower probability of occurrence) as clustered sightings. If MDIFW concludes that coyote predation is causing a high risk to wintering deer, it will first attempt to alleviate the problem using alternative measures, such as hunting coyotes over bait. If the Department determines that alternatives will not be effective, limited snaring will be used; however, prior to setting any snares, MDIFW will conduct a pre-survey of the area for lynx sign to assess their presence or absence in the problem area. If lynx are not present, MDIFW will deploy snarers into the affected deer wintering area; the Department will implement the lynx-avoidance measures set forth in this policy.
4. **All other areas in Wildlife Management Districts 1-9 and 13:** MDIFW will continue to upgrade and provide educational materials to the public, trappers, and

animal damage control personnel involved in snaring. As data from the lynx study area is analyzed, and a wider survey protocol is developed, MDIFW will incorporate the findings of each into its coyote snaring policy. All aspects of MDIFW's coyote snaring policy will be implemented, including MDIFW's lynx-avoidance measures set forth in its coyote snaring policy, which includes deployment of snarers, protocols for using care and caution to prevent the capture of lynx, and contacting an MDIFW regional biologist immediately if a bobcat or lynx is snared

13. Wolf-like Canids: The gray wolf is listed as a federal endangered species in Maine; wolves have been extirpated in the state since the early 1900s. The nearest wolf population is in Quebec, not far from the Maine border. MDIFW is responsible for the protection and conservation of all of the state's wildlife, and this includes resident gray wolves. The Department maintains contact with state, provincial, federal, and non-governmental biologists to stay current with issues surrounding wolves in the Northeast. To avoid incidental capture of any wolves naturally dispersing to Maine, the Department will:

1. Include wolf information (identification, status, tracks, sign, snaring precautions to avoid capture) in the Department's coyote snaring training programs.
2. Investigate areas where the Department has identified consistent reports and sign of large, wolf-like canids prior to deploying snarers. If evidence of wolf-like canids is found, the area, including a 5-mile buffer, will be closed to snaring.
3. Require snarers to immediately advise the regional wildlife biologist of suspected wolf activity and to avoid setting snares where large canid sign is observed.
4. Require snarers to contact the regional wildlife biologist immediately if a wolf-like canid is snared. The Department will also notify the USFWS.

Commissioner, Department of Inland Fisheries and Wildlife

Date _____

Appendix 3K

Summary of Deer Task Force Meeting #2

Northern and Eastern Maine Deer Task Force Meeting #2 June 12, 2007 MDIFW Bangor Headquarters 10:30 a.m. – 2:30 p.m.			
Facilitator:	Matt Libby, Chair Sandy Ritchie and Gene Dumont, MDIFW	Note Taker/Recorder:	Becky Orff – Recorder Sandy Ritchie – Meeting Summary
Next Meeting: July 9, 2007; 10:30 a.m. – 2:30 p.m. (lunch provided)			
Participants:	<p>Task Force Members: Matt Libby, Chair, Maine Sporting Camp Owners Association; Tom Doak, Small Woodland Owners Association of Maine; Pat Strauch, Maine Forest Products Council; Gerry Lavigne, Sportsman’s Alliance of Maine; Sally Stockwell, Maine Audubon; Brian Smith, Maine Bowhunter’s Association; Don Dudley, Maine Trappers Association; Lee Kantar, MDIFW Deer Biologist; Rich Hoppe, Regional Wildlife Biologist, Region G; Tom Schaeffer, Regional Wildlife Biologist, Region C; and Gene Dumont, Wildlife Management Section Supervisor.</p> <p>MDIFW: Becky Orff, Ken Elowe, Mark Stadler, Sandy Ritchie, Sgt. Dave Craven.</p> <p>Observers/Presenters: Gordon Mott, Barry Burgason (Huber Resources), Mike Dann (Seven Islands), and John Cashwell (Seven Islands), and Dan Harrison (UMaine)</p>		
Action Items:	<ul style="list-style-type: none"> • Is there any information that addresses bear reduction and its effect on deer? • Follow-up with Rod Cumberland of New Brunswick re their deer situation especially regards habitat and winter severity. • Dave Craven to provide video of newer models of snares. 		
Agenda – Summary of Meeting Highlights			
<p>The Department is recording each Task Force meeting; however the intent of this summary is to capture the highlights rather than provide a detailed transcript.</p> <p>1. Identification of Issues and Concerns Associated with Deer Management in Maine – At our first meeting we reviewed the deer issues and concerns raised by the 1999 Big Game Working Group but wanted to give the Task Force the opportunity to brainstorm their own list to ensure completeness. Issues and concerns were recorded on a series of flip charts and included the following:</p> <p style="margin-left: 20px;"><u>Habitat</u></p>			

- adequate mechanisms to maintain/sustain shelter
- loss of high quality deer wintering areas (DWAs)
- transitioning forests – moving among age classes
- connectivity of wintering habitat
- suboptimal DWA habitat resulting in poor deer condition and/or mortality
- difficulty in determining winter carrying capacity
- changes on the landscape that may favor some species (e.g., coyotes) over others
- are we making the right sivicultural recommendations for DWAs?
- recent trend in industrial forestland ownership changes
- concerns about proposed LURC zoning rules (12% of the land base)

Predation/Mortality

- fawn mortality by black bear
- coyote predation
- poaching

Deer Goals and Objectives

- practicality of achieving Big Game Working Group goals and objectives
- costs of achieving the goals and objectives – who is responsible?
- multiple species management conflicts (bear, moose, etc.)

Use and Demand

- temporary closures (WMDs) to hunting
- unmet demand for hunting opportunity (social and economic implications)
- bowhunting / youth – consistency in doe harvest regulations

Miscellaneous

- credible deer census
- good data to base decisions on
- weather-related changes that will affect the future
- changes / improvements to access – public access is at unprecedented levels, affects on habitat and predation

Meeting #2 was devoted to a discussion of deer mortality, especially coyote predation. Other issues and concerns identified above will be discussed in subsequent meetings.

2. Review of Materials Handed Out to the Task Force

- **Coyote Issues and Concerns Raised by the 1999 Big Game Working Group** – The Big Game Working Group raised a number of issues and concerns prior to developing goals and objectives for coyotes.

Population/Control

- Can we reduce coyotes to such an extent that the deer population can increase?
- How far does one go to manipulate one species in favor of another?
- Poisoning, shooting, and trapping on a broad scale in other parts of the coyote's range

- has not worked.
- How would the presence of wolves affect the coyote population?
- Continue existing local control programs, at least until the effectiveness of these programs is determined.
- Need greater coyote control adjacent to deer wintering areas.
- It is not feasible to control the coyote population over large areas.

Use

- Need to develop better information concerning hunting and trapping effort (voluntary reporting system, eliminate tagging fees).
 - Develop programs to promote coyote as a game species rather than a nuisance: allow hunting on Sundays, expand night hunting opportunities, and institute a September trapping season.
- **Gerry Lavigne’s Report to the 117th Maine Legislature: *A Study of Eastern Coyotes and their Impact on White-tailed Deer in Maine***
 - Prey selection by coyotes is opportunistic: they will consume whatever food is currently available, including carrion and fruits.
 - White-tailed deer comprise a significant portion of coyote diets in Maine, particularly during winter and the spring denning period.
 - Coyote predation is considered an important component of early losses among newborn fawns in summer.
 - Coyote predation on deer may be of sufficient magnitude in some parts of the state to contribute to population declines and/or impede deer population recovery.
 - Effects of coyote predation are most damaging in parts of the state in which: 1) wintering habitat quality has been severely reduced; 2) winters tend to be severe; and 3) alternate prey are less available.
 - The real obstacle to attaining a higher deer population in more than half the state is the declining quality and quantity of wintering habitat for deer.
 - Coyote control is most effective where it is focused and specific problem animals are targeted.
 - Large scale control efforts (i.e. from a bounty) are not a viable option for achieving higher deer populations. Unless a bounty system can remove more than 70% of the coyote population annually, and prevent rapid recolonization by dispersing juveniles, real suppression of coyote populations can never be achieved.
 - Control is all about reducing the coyote population to a level that has an effect on deer. The smaller the area, the more realistic the chances to achieve.
 - **Bear Management Goals and Objectives** – Concerned about the potential impact of bear predation on deer, especially newborn fawns in downeast Maine, the 1999 Big Game Working Group developed an objective for WMD 29 (now WMD 27/28) to increase the traditional hunting and trapping effort on bears within the existing season framework to reduce fawn mortality by 15% by (date - to be determined by IF&W).
 - **Washington County Deer Population Committee Report** – In 1993 a committee was formed to review options for increasing the deer population in Washington County. Regional Wildlife Biologist summarized the committee’s findings.
 - Illegal hunting and hunting methods were identified as one of the limiting factors

negatively affecting the deer population – illegal activities that were exacerbated by several warden district vacancies.

Status: Warden vacancies have since been filled.

- Habitat condition, particularly winter shelter, was considered to be the most important factor limiting any meaningful increase in deer numbers in Washington County. The following actions were recommended:

- Identify historic DWAs and work with landowners to develop watershed management plans that incorporate DWAs and riparian travel corridors.

Status: Staff developed plans but they were never fully adopted.

- Promote herbaceous seeding of winter logging roads, log landings, stream crossings, etc. to provide high quality spring forage.

Status: Ongoing standard operating practice.

- Encourage winter harvest operations, particularly if near DWAs to make browse available to deer.

Status: Ongoing standard operating practice

- Prioritize NRPA zoning of high and moderate DWAs in organized towns in Washington County.

Status: Annual aerial surveys have been planned, but the lack of wintering conditions has precluded completion in some years.

- Encourage Moosehorn NWR to implement a long-term deer winter shelter management strategy for the Baring and Edmunds Units.

Status: Working with the refuge recently.

- Continue to use the Animal Damage Control Program and available funding to monitor and resolve predation on deer while confined in DWAs.

Status: Was ongoing until funds for ADC activities were suspended in 2003.

- Recommended that the penalty for killing a doe deer illegally be increased as a deterrent.

Status: Legislation passed.

- Recommended that archery regulations parallel firearms regulations in bucks only restrictions.

Status: The recommendation has been advocated, but there has been no sponsoring legislation to date.

- Consider closing Washington County to deer hunting.

Status: Frequently discussed, but there has been to action to date.

3. Summary of Coyote Research in Maine, New Brunswick, and Nova Scotia – Dan Harrison, Professor of Wildlife Ecology at the University of Maine, presented a powerpoint program highlighting coyote research in Maine, New Brunswick, and Nova Scotia. A summary of Dan’s presentation follows.

- Coyotes have their greatest effect on fawns and recruitment. Even at relatively low densities, coyotes will still feed their pups deer fawns.
- Coyote predation on deer can be buffered by alternative foods such as snowshoe hare. It is a very complex, community-level response.
- Coyotes, snowshoe hare, other predators, winter weather, and habitat are all interacting in a very complex way.
- There is no evidence that coyotes respond numerically to deer abundance in eastern North America; therefore, the effects of coyotes on deer is greatest at the extremes of their range where climate, snow depth, bears, and other predators contribute to deer densities.
- If we took coyotes off the landscape, Dan doesn’t know whether the deer population would be higher given habitat issues and bear predation.
- Bear population increases in boreal forests that are being harvested.
- The numbers do not support widespread coyote control as an effective management tool because of a number of compensatory factors (rigid land tenure systems, territorial, monogamous, non pack forming, poor cooperative foragers, aggressive, first year dispersal).
- Removal of territorial residents in DWAs can create social chaos – the majority of the population is non-territorial and non-breeding during winter.
- Most coyotes captured in the winter are only temporary residents of a DWA. Territories seem to stay stable regardless of the removal of adult animals – dispersing animals fill in.
- What is motivating coyotes to move in the winter is not about food. They are looking for territories and achieving population reduction is going to be difficult.
- Population modeling has suggested that with 63% of adult females breeding and average litter sizes of 7.6, annual survival of adult females would need to be reduced to less than 20% to maintain a stable population. Observed values for adult female survival range from 55-90%, and Maine is near the higher end of adult survival. Twelve coyotes were removed from one study area without any loss of breeding females or a breeding territory.
- History has demonstrated that widespread coyote control simply doesn’t work.
 - From 1937-1970 federal ADC programs played the coyote numbers game.
 - \$30 million expended each year.
 - Average of 83,000 coyotes killed each year.
 - Widespread effects on non-target species.
 - 3 Blue Ribbon Committees reported no longterm effects, poor cost benefit, and adverse ecological effects.

4. Overview of MDIFW’s Incidental Take Plan – In response to an active lawsuit from the Animal Protection Institute, MDIFW recently submitted an Incidental Take Plan (ITP) in conjunction with an application from the Department to the U. S. Fish and Wildlife Service for a Section 10 permit under the Endangered Species Act to absolve the Department and its agents from liability in the event of incidental take of Canada lynx or bald eagles in Maine that may occur as a result of Maine’s trapping program. A timetable for a resolution of Maine’s ITP is not known. An ITP for Maine’s snaring program, previously in development, has been put on hold pending a decision with the trapping ITP.

5. Tools and Methods Available to Target Coyotes – Sgt. Dave Craven, a game warden with

extensive trapping and snaring experience discussed several tools and methods to target coyotes and offered his observations on coyote control.

- He is not advocating for widespread coyote control, but he can cite several examples of anecdotal information where coyote control can be effective.
- When you take away a regulated predator control program, you open the door to people taking matters into their own hands.
- There are a number of studies that refute some of the points in Dan Harrison's presentation.
- Habitat in Washington County is underutilized, and limited funds are well spent even if only a few deer are saved.
- We need to pursue ITPs, obtain good equipment, and operate humanely with well qualified individuals.
- Newer models of snares hold promise.
- Ram power snares have kill times approximating 4 minutes.
- M44s are very canine-specific as opposed to snares.
- Spring and summer is the easiest time of the year to kill offending coyotes. It takes some training and use of dogs at the densite.
- Rich Hoppe mentioned that shooting coyotes over bait seemed to be gaining popularity in the north. Dave indicated that it can't replace a focused effort to control offending animals.

6. Next Meeting

- When: Monday, July 9 from 10:30 a.m. – 2:30 p.m. (lunch provided)
- Where: First floor conference room at MDIFW in Bangor
- Meeting Topic: A discussion of habitat, especially wintering habitat.
- Suggested Invited Presenters:
 - Bill Krohn, Leader Cooperative Fish and Wildlife Research Unit and Kasey Legaard, UMaine graduate student
 - MDIFW Habitat Group
 - Don Mansius, Maine Forest Service
 - Fred Todd, Land Use Regulation Commission
- Materials Needed
 - MDIFW's Deer Habitat Management System
 - 2005 Maine Forest Report
 - Proposed LURC DWA zoning criteria

Appendix 3L

Recommendations to the Commissioner of the Maine Department of Inland Fisheries and Wildlife for Increasing the Deer Herd in Northern and Downeast Maine

Developed by the Northern and Eastern Maine Deer Task Force
Fall 2007

Below, in Microsoft Word's track changes format, are final review comments submitted to the Department by task force members.

Short-term Strategy [now – 2025]

Deer population

The Task Force recommends that:

1. Maine Department of Inland Fisheries and Wildlife (MDIFW) and forest landowners implement the cooperative habitat management recommendations outlined below to maintain deer populations in balance with carrying capacity of the existing winter habitat and to gradually increase deer populations to fill the improving winter habitat carrying capacity.

Population goals need to be established in consideration of the balance between biological and economic factors and updated research information.

2. MDIFW convene a species planning working group with that includes landowners to integrate the separate population and habitat management goals for deer, moose, bear, marten, and lynx into a unified set of habitat goals for northern and eastern Maine.
3. MDIFW identify areas of high road mortality and work with the Maine Department of Transportation to identify strategies to reduce deer/vehicle collisions, such as improved signage, driver education, etc.
4. MDIFW increase its efforts to educate the public about reasons not to feed deer especially in areas with high numbers a high incidence of road mortality.

Habitat

The Task Force believes that cooperative efforts between landowners and MDIFW, rather than land-use zoning, is the preferred option for addressing deer management concerns in northern and eastern Maine.

The Task Force believes that cooperative efforts between landowners and MDIFW remain a valuable option for addressing deer management concerns in northern and eastern Maine. No changes to the P-FW standards are recommended at this time. However, LURC zoning will remain the baseline tool to conserve deer wintering areas (DWAs) on land ownerships who do not participate in voluntary cooperative habitat initiatives.

It also believes that a biologically sound landscape-level management approach / strategy to DWA habitat management is ecologically sound and preferred.

The Task Force recommends that:

1. During the life of the “short-term strategy” period, MDIFW establish the Northern and Eastern Maine Deer Task Force to oversee and guide the implementation of the recommended strategies contained in this report to the Commissioner. In addition, MDIFW will convene the Deer Task Force at least annually to review process, evaluate progress in improving deer populations, update and refine goals with on-going research information, and continued evaluation of consider economic factors.
2. MDIFW, Maine Forest Products Council (MFPC), and the Small Woodland Owners Association of Maine (SWOAM), take the lead in developing DWA management guidelines for review by other members of the Deer Task Force. DWA management guidelines will be shared with all forest landowners. MFPC and SWOAM will promote and encourage the implementation of these DWA management guidelines among its their members and will educate new members about the program and encourage their participation. MDIFW will work with other major landowners.
3. MDIFW share historic and current deer use maps and information with landowners as a reference point for deer activity.
4. MDIFW and forest landowners work together to identify and map those areas where deer are currently wintering.
5. Forest landowners use this information [2, 3, and 4 above] on where deer are currently wintering, the DWA maps, and the management guidelines to implement a cooperative, landscape-level DWA management effort. The initial focus of this DWA management effort should be directed toward managing deer in locations where they are currently wintering, using and matching this information to the management objectives of the landowner.

Examples of concepts to be further evaluated and refined by the working group include.

- Zoned DWAs not being used by deer (inactive) – Evaluate the role these yards will play in future deer recovery efforts or if a yard should be removed from zoning.
- DWAs being used by deer (active) regardless of zoning status – Evaluate the possibility of holding winter cover in active stands as a bridge to a “shifting mosaic” or sustainable flow of available winter cover desired in the long-term strategy. (For landowners with existing cooperative agreements, the total deer wintering area acreage must not exceed the existing P-FW and cooperative-agreement acres. Any addition of new areas used by deer will

be balanced by a reduction in P-FW and/or cooperative-agreement areas not being used by deer.)

6. MDIFW identify and notify the small forest landowners in the organized and unorganized towns in northern and eastern Maine when they have important deer wintering area habitat on their ownership; provide them with the DWA management guidelines; and develop mechanisms for them to receive DWA management technical assistance. [This technical assistance may include the following: MDIFW regional biologist landowner assistance; NRCS programs such as EQIP, WHIP; MFS cost-share programs; and MDIFW train consulting foresters trained by MDIFW to assist with DWA management.] In locations where MDIFW and MFPC landowners have determined DWA management is needed and the area spans DWAs span both organized and unorganized townships, MDIFW will work with local communities to promote the cooperative DWA management program.
7. MDIFW, sportsmen, landowners, and the Maine Legislature explore the feasibility/desirability and methods for offering positive incentives to encourage landowners to manage for DWA habitat on their lands [Requires legislation].
8. MDIFW, sportsmen, landowners, and the Maine Legislature explore the feasibility of using public funds to acquire key tracts of deer wintering habitat through fee acquisition, land swaps, or conservation easements to reach habitat objectives.

Predation

The Task Force recommends that:

1. MDIFW establishes a Deer Predation Working Group to review and update MDIFW's current coyote control policy. The working group will include representatives from MDIFW, Maine Trappers Association (MTA), Maine Professional Guides Association (MPGA), Maine Audubon, Sportsman's Alliance of Maine (SAM), University of Maine (UMO), MFPC, and SWOAM. The working group will be charged with considering the:
 - a. methods of coyote control [such as Animal Damage Control (ADC) winter coyote control focused at DWAs being used by deer; directed den hunting during spring – early summer; or other ideas developed by that working group];
 - b. tools and devices to be used [foot-hold traps, neck snares, body-gripping restraining devices, poison, hounding, shooting over bait, den hunting, or other techniques]; and
 - c. the procedures by which, when, and where MDIFW will deploy ADC agents. The policy and procedures developed by that working group must adequately consider and minimize impacts to non-target species especially threatened and endangered species. It is recommended that this policy include the principles of adaptive management so that the policy may evolve as new information becomes available.

The working group recommends that priority be given to directed coyote control in those areas with over-wintering deer that are being actively managed under the provisions of the management guidelines outlined above.

The working group recommends that priority be given to directed coyote control in those areas with over-wintering deer that are being actively managed under the provisions of the management guidelines outlined above and where there are documented predation problems from coyotes.

2. MDIFW extends the current coyote night-hunting season to run from 16 December through 30 August, annually. [Requires legislation]
 - o MDIFW reduces evaluates the need and consequences of reducing the bear population in northern and eastern Maine during the short-term strategy period to allow the deer population to recover [reduced fawn predation] and consider accomplishing this by increasing the length of the bear season [Requires agency rule-making], increasing the bear bag limit [Requires legislation], reinstating the spring bear hunt [Requires legislation] with a “cub law,” or other strategies appropriate to achieve the desired population reduction Any decision must be integrated with the work of the species planning work group established above (Deer Population, 2).reinstating the spring bear hunt with a “cub law,” increasing the bear bag limit, increasing the bear-hunting season, or other strategies appropriate to achieve the desired population reduction.

Research

The Task Force recommends that:

1. MDIFW, MFPC, SWOAM, Cooperative Forestry Research Unit (CFRU), Cooperative Fish and Wildlife Research Unit (CFWRU), UMO, and other appropriate stakeholders establish a Deer Research Working Group to augment deer management informational gaps. Such topics may include the following:
 - o Assess and improve science on DWA management, especially at the landscape scale.
 - o Review and possibly improve MDIFW’s ability to estimate deer density.
 - o Impact of winter feeding on deer and DWAs.
 - o Importance of corridors to DWAs and deer movement.
 - o Changing deer migration patterns and deer use of non-traditional wintering areas.
 - o Economic analysis of costs of DWA management to forest landowners.
 - o Sources of fawn mortality and their impacts.

Funding

The Task Force recommends:

1. MDIFW, sportsmen, landowners, and the Maine Legislature investigate sources of public funding for monitoring and reporting on the program to evaluate effectiveness.
2. MDIFW, sportsmen, landowners, and the Maine Legislature investigate sources of funding (public and private) for research and development efforts to improve knowledge about deer populations and habitat impacts, relationships, and trends.
3. The Maine Legislature considers using a portion of the Land for Maine's Future funds to acquire DWAs.

Hunting

The Deer Task Force recommends:

1. When a Wildlife Management District (WMD) in northern or eastern Maine is designated as "bucks-only" for the regular firearms deer hunting season, this bucks-only provision should also apply to all other deer hunting seasons in that WMD [Requires legislation].
2. If through time, the collective recommendations contained in this report are not achieving an increase in deer numbers, MDIFW should consider
 - a. other hunting-related options to reduce deer harvests in northern and eastern Maine while still retaining opportunity; such might include road closure systems, trophy hunting programs, etc. [Requires agency rule-making],
 - b. reducing the length of the deer hunting seasons in northern and eastern Maine, and lastly [Requires agency rule-making],
 - c. closing northern and eastern Maine to all deer hunting [Requires agency rule-making].
3. If MDIFW determines that the illegal kill of does during the hunting seasons is undermining efforts to increase deer numbers, then it should consider reducing the length of the deer hunting seasons in northern and eastern Maine; and if that also fails, then MDIFW should consider closing northern and eastern Maine to all deer hunting [Requires agency rule-making].
4. Filling existing Warden Service district vacancies.
5. Increasing Warden Service surveillance of deer hunters.
6. Increasing fines and penalties associated with illegal kill of female any deer [Requires legislation].
7. Increasing use of Operation Game Thief and offer substantial rewards for information regarding illegal deer hunting in northern and eastern Maine, especially female deer.

Education and Outreach

The Deer Task Force recommends:

1. MDIFW, Maine Trappers Association (MTA), Maine Professional Guides Association (MPGA), and others collaborate to provide seminars on coyote trapping, hunting, and control, and ways to limit capture of nontarget species, especially threatened and endangered species.
2. MDIFW “train” forest landowners in the concepts of DWA management and procedures to collect data on deer and DWA field observations [deer populations, habitat, and predation; what to look for and how to record and enter the observations into a database]. Foresters will assist MDIFW with the collection of information about overwintering deer and DWA information necessary for DWA management.
3. MDIFW and forest landowners, through the Certified Logger Program, work together to promote communication and interaction between biologists, foresters, and loggers regards deer management and DWA identification and management.

Increase MDIFW Capacity to Manage DWAs

The Deer Task Force recommends:

1. MDIFW consider the reallocation of existing MDIFW funds and staff to accomplish DWA management objectives.
2. MDIFW, sportsmen, landowners, and the Maine Legislature identify and create new funding sources for DWA management and additional MDIFW staff to accomplish DWA management objectives.
- 3.
4. MDIFW consider the reallocation of existing MDIFW funds and staff to accomplish DWA management objectives.
5. MDIFW, sportsmen, landowners, and the Maine Legislature identify and create new funding sources for DWA management and additional MDIFW staff to accomplish DWA management objectives.

Appendix 4

Meeting #1 – June 26, 2008

Appendix 4A Summary of Meeting #1

Appendix 4B Consent Decree and Order

Appendix 4A

<h1 style="margin: 0;">Deer Predation Working Group</h1> <p style="margin: 0;">Meeting #1 June 26, 2008 MDIFW Headquarters, Augusta 10:00 am – 2:00 pm</p>			
<hr/>			
Facilitator:	Sandy Ritchie	Meeting Summary:	Sandy Ritchie
Next Meeting: July 30, 2008; 9:00 a.m. – 2:00 p.m. (lunch provided)			
Participants:	<p><u>Working Group Members:</u> Mike Dann, Small Woodland Owners Association of Maine; Doug Denico, Maine Forest Products Council; Wally Jakubas, Maine Department of Inland Fisheries and Wildlife; Dana Johnson, Maine Trappers Association; Gerry Lavigne, Sportsman's Alliance of Maine; Jon Olson, Maine Farm Bureau; Bos Savage, Maine Audubon; Skip Trask, Maine Professional Guides Association</p> <p><u>MDIFW:</u> Lee Kantar, Deer and Moose Biologist</p> <p><u>Guests:</u> Gordon Mott and Geri Vistein</p>		
Action Items:	<ul style="list-style-type: none"> • Wally: forward a link to a power restraint video • Lee: provide articles and references from the Northeast and eastern Canada regards bear predation of deer • Sandy: provide copies of the Trapper Education Manual and Best Management Practices for Coyote Trapping • Dana: bring trapping equipment and provide a demonstration at the next meeting. 		
Agenda – Summary of Meeting Highlights			
<p>The intent of this summary is to capture meeting highlights not to provide a detailed transcript.</p> <p>1. Welcome / Introductions / Review Agenda - Sandy welcomed members of the Deer Predation Working Group (Working Group) and thanked them for participating. Working Group members, Department staff, and guests introduced themselves. The University of Maine was invited to participate but declined.</p> <p>Sandy indicated that with the Working Group's support she would be facilitating meetings and Lee Kantar would provide technical assistance. The group unanimously agreed with this process.</p> <p>Sandy asked the Working Group how they wanted to incorporate input from guests attending the meeting. The group agreed that guests were free to participate in meetings as long as progress wasn't stalled.</p>			

2. Ground Rules – Sandy led the group in developing the following ground rules:

- One conversation at a time / be as concise as possible
- Maximize participation / respect others' perspectives / seek to address all perspectives
- Decision making by consensus
- All have the responsibility to move the process forward

3. Why Are You Here / Background on the Northern and Eastern Maine Deer Task Force

Sandy provided a brief background on the history of the Deer Predation Working Group.

In response to the public's intense interest and concern for the condition and future of the deer herd in eastern and northern Maine, MDIFW Commissioner Martin established the Northern and Eastern Maine Deer Task Force in April, 2007 and charged the group to: 1] characterize the status and condition of the deer population in northern and eastern Maine; 2] review ways to enhance deer wintering habitat in northern and eastern Maine; 3] review coyote management policies; and 4] submit "workable" recommendations to the Commissioner for his consideration.

LD 823, 'Resolve, To Create an Effective Deer Habitat Enhancement and Coyote Control Program.'

Throughout the first session of the 123rd Legislature, legislators considered the public frustration with low deer numbers and public concerns about coyote predation on deer. The Joint Standing Committee on Inland Fisheries & Wildlife initially prepared a Resolve directing the Dept. of Inland Fisheries and Wildlife "To Create an Effective Coyote Control Program." This Resolve directed the Commissioner of Inland Fisheries & Wildlife to review the Department's existing coyote control program and to establish methods of controlling the coyote population and to set goals to manage the coyote populations; it also required that the Commissioner report his findings and recommendations...to the Joint Standing Committee on Inland Fisheries & Wildlife by December 30, 2007. Based on the Commissioner's findings, the Joint Standing Committee on Inland Fisheries & Wildlife reserved the right to submit legislation related to the report to the Second Regular Session of the 123rd Legislature.

Upon further consideration of the several factors possibly contributing to low deer numbers in northern and eastern Maine, the Joint Standing Committee amended and expanded the scope of its initial Resolve:

LD 823, 'Resolve, To Create an Effective Deer Habitat Enhancement and Coyote Control Program.'

Sec. 1 Deer habitat enhancement and coyote control program. Resolved: That the Commissioner of Inland Fisheries & Wildlife shall establish a working group to review existing programs and efforts related to creating, enhancing and maintaining critical deer habitats in the State and reducing predation of deer by coyotes. In reviewing the programs and efforts, the working group shall look for ways to improve and increase wintering habitat for deer and for ways to increase the survivorship of deer on a year-round basis. The working group shall also establish methods of controlling coyote populations and set goals to manage the coyote populations; and be it further

Sec. 2 Report. Resolved: That the Commissioner of Inland Fisheries & Wildlife shall report the working group's findings, recommendations and draft legislation to the Joint Standing Committee on Inland Fisheries & Wildlife by December 30, 2007. The Joint Standing Committee on Inland Fisheries & Wildlife may submit legislation related to the report to the Second Regular Session of the 123rd Legislature.

The enactment of LD 823 occurred after Commissioner Martin had established the Northern and Eastern Maine Deer Task Force; however, the Task Force and its members became the working group identified in LD 823.

The Northern and Eastern Maine Deer Task Force met eight times over the course of the spring, summer, and fall 2007, investing more than 30 hours in discussing the many factors likely contributing to low deer numbers and developing a series of recommended strategies to rebuild deer populations. In January 2008, MDIFW presented a final report to the Joint Standing Committee on Inland Fisheries and Wildlife constituting the Task Force's findings, recommendations, and proposed legislation. A copy of the entire report is available on our website at http://mainegov-images.informe.org/ifw/wildlife/surveys_reports/pdfs/ne_deerreport.pdf .

4. What is your charge?

Sandy reviewed the legislative resolve creating the Deer Predation Working Group.

LD 2288, 'Resolve, To Create a Deer Predation Working Group.'

As a result of recommendations of the Northern and Eastern Maine Deer Task Force, the 123rd Legislature developed a resolve directing the Commissioner of Inland Fisheries and Wildlife "To Create a Deer Predation Working Group."

Sec. 1 Deer predation working group. Resolved: That the Commissioner of Inland Fisheries and Wildlife shall establish a deer predation working group to review and to recommend necessary revisions to the Department of Inland Fisheries and Wildlife's predation control policy. The 8-member working group must include representatives from the Department of Inland Fisheries and Wildlife, the University of Maine System, an organization that represents the needs of Maine's forest products community, an organization that represents trappers, an organization that represents professional guides, an environmental organization, an organization that represents sportsmen and an organization that represents small woodlot owners in the State; and be it further

Sec. 2 Duties. Resolved: That the working group shall consider:

16. Methods of coyote control;
17. Tools and devices to be employed in predation control;
18. The protocol used by the Department of Inland Fisheries and Wildlife to determine when and where to deploy animal damage control agents;
19. The need and consequences of reducing the bear population in northern and eastern Maine to allow the deer population to recover; and
20. The appropriate protocol for accomplishing bear reductions, if any, as determined under subsection 4.

The policy and protocols developed by the working group must adequately consider and minimize impacts to nontarget species, especially threatened and endangered species; and be it further

Sec. 3 Report. Resolved: That the Commissioner of Inland Fisheries and Wildlife shall report the working group's findings and recommendations and any recommended legislation to the joint standing committee of the Legislature having jurisdiction over inland fisheries and wildlife matters no later than January 5, 2009. That joint standing committee may submit legislation related to the report to the First Regular Session of the 124th Legislature.

House Amendment A to LD 2288 amended the 8-member working group to include a 9^h member representing a statewide organization that represents farming.

5. Reviewed Consent Decree

As a result of a lawsuit by the Animal Protection Institute against the Maine Department of Inland Fisheries and Wildlife under the federal Endangered Species Act a Consent Decree and Order was filed on October 14, 2007 by the United States District Court for the District of Maine. The Consent Decree specified that by whatever regulatory means are necessary, including, if necessary, emergency rulemaking procedures, Commissioner Martin shall, prior to October 14, 2007 impose the following restrictions on trapping activities conducted in the geographic area of Wildlife Management Districts (WMDs) 1, 2, 3, 4, 5, 6, 8, 9, 10, and 11.

1. Commissioner Martin shall prohibit the use of all foothold traps that have an inside jaw spread of more than 5 3/8 inches, except that such traps with an inside jaw spread of more than 5 3/8 inches may be used if they are set so as to be fully or partially covered by water at all times. Commissioner Martin shall require that foothold traps that are permitted (that is, those with an inside jaw spread of 5 3/8 inches or less) be equipped with at least one chain swivel.
2. Commissioner Martin shall prohibit the use of cage traps which have an opening of more than 13 inches in width or more than 13 inches in height. The Commissioner may permit cage traps of any size to be used (1) for wildlife research and survey activities; (2) for the removal of animals that are causing damage to property; or (3) to capture bear.
3. Commissioner Martin shall keep in effect the regulation currently in effect on the date this Decree is entered that prohibits foothold and killer-type traps from being set within 50 yards of bait that is visible from above and that permits bait to be used for trapping only if it is completely covered to prevent it from being seen from above, and is covered in such a way as to withstand wind action and other normal environmental conditions. Bait is defined as animal matter including meat, skin, bones, feathers, hair or any other solid substance that used to be part of an animal. This includes live or dead fish. For the purposes of this paragraph, bait does not include animal droppings (scat), urine or animals, dead or alive, held in a trap as the result of lawful trapping activity.
4. Commissioner Martin shall keep in effect the regulation currently in effect on the date this Decree is entered that prohibits the setting, placing and tending of any killer-type trap unless set completely underwater or at least 4 feet above the ground or snow level in the manner described in paragraph 5(e) below, except that killer-type traps with an inside jaw spread not to exceed 5 inches may be permitted under the following conditions: (1) when set so as to be partially covered by water at all times, or (2) when set under overhanging stream banks, or (3) when used as blind sets. For purposes of this paragraph, a blind set is defined as any set designed to catch a wild animal, without the use of bait, lure or visible attractor, by intercepting the animal as it moves naturally through its habitat. Bait, lure and visible attractor do not include animal droppings (scat) or urine.
5. Killer-type traps set at least four feet above ground or snow level may be permitted by Commissioner Martin for use in Wildlife Management Districts 1, 2, 3, 4, 5, 6, 8, 9, 10 and 11 so long as such traps are affixed to a pole or tree that is at an angle of 45° or greater to the ground and that is no greater than 4 inches in diameter at 4 feet above the ground or snow level.
6. Commissioner Martin shall not permit the use of snares for any purpose other than to catch beaver and bear unless and until IF&W obtains an Incidental Take Permit explicitly authorizing

additional uses of snares.

7. Commissioner Martin shall recommend to trappers that they not set on the ground foothold traps with an inside jaw spread of more than 5 inches that are otherwise authorized by paragraph 1 unless such traps are equipped with offset jaws.

The following shall apply state-wide:

1. Commissioner Martin shall maintain a telephone hotline which will be staffed seven days a week, 24 hours per day, during trapping season. Trappers shall be made aware of the hotline and will be advised that they are to call the hotline in the event that a lynx is incidentally captured. When the hotline staff receive a report of an incidentally captured lynx, they shall either dispatch an IF&W employee to the scene to assist in the assessment and release of the lynx, or, if an IF&W employee is not available, shall advise the trapper on how to assess the lynx for any injuries and safely release the lynx.
2. If any lynx sustains an injury as a result of an incidental trapping, Commissioner Martin shall direct IF&W to be responsible for the rehabilitation of the lynx and for release back into the wild once rehabilitation is complete. In consultation with veterinarians, IF&W shall, by the time the trapping season starts on October 14, 2007, implement and distribute to its staff specific guidelines detailing when a lynx should receive veterinarian attention. Commissioner Martin shall inform API and the Intervenors in writing of any lynx rehabilitation efforts made pursuant to this paragraph.
3. By the start of the trapping season on October 14, 2007, Commissioner Martin shall establish a network of qualified veterinarians and animal rehabilitators who IF&W can call upon as needed to provide care for injured lynx. Commissioner Martin shall inform API and the Intervenors in writing of the identity of those veterinarians and animal rehabilitators who may be called upon by IF&W.
4. Commissioner Martin shall direct IF&W to investigate each incidental lynx trapping and will advise the United States Fish and Wildlife Service ("USFWS"), API, and the Intervenors regarding the details of each trapping incident and provide the relevant support and documentation. The Commissioner shall provide to API and the Intervenors only those documents and information that are deemed to be public within the meaning of Maine's Freedom of Access Act, 1 M.R.S.A. §§ 401-411, and shall provide said information to API and the Intervenors within 14 days of becoming aware of an incident in which a lynx has been incidentally trapped.
5. Commissioner Martin shall continue to prohibit the intentional trapping and hunting of lynx.

If IF&W obtains an Incidental Take Permit (ITP) for its trapping program, Commissioner Martin shall not be bound by the terms of this Decree during any period when the Permit is in effect. Instead, during any period when such a Permit is in effect, Commissioner Martin shall be bound by the terms of the Permit.

Status of MDIFW's Incidental Take Permit: MDIFW submitted its ITP to the USFWS Old Town Office earlier this spring. USFWS provided a few additional, relatively minor comments which Wally will incorporate into the ITP by the end of July. Once the ITP is finally submitted there are several other steps that must be completed including a 90-day nationwide, public comment period before a decision is rendered. It is fair to say that if Maine's ITP is approved, it won't happen for probably at least one year.

6. Scope of Work

The Working Group discussed their scope of work. Gerry suggested that the group wanted to improve survival of white-tailed deer by reducing predation by coyotes and bear. Discussion ensued and some members expressed concerns about reducing bear numbers in light of their value as a big game animal. We agreed for now to acknowledge that bear preyed on deer, especially fawns in the spring, but that the acknowledgement didn't necessarily mean the Working Group would choose to recommend actions to control predation by bear.

It was the general opinion of the Northern and Eastern Maine Deer Task Force that predation by coyotes and bears was one of several factors (habitat being the primary one) limiting deer herd growth in northern and eastern Maine and that a targeted predator control program focused at active deer wintering areas and spring fawn mortality could improve local deer populations.

Sandy indicated that recommendations from the Deer Predation Working Group would be fully vetted before the Legislative Fish and Wildlife Committee and the public. There was general agreement among Working Group members that they would strive to make recommendations on predation control that were reasonable, in terms of their impact on nontarget species, costs and availability of funds, biological effectiveness, and social acceptability.

7. Methods of Coyote Control

The remainder of the meeting was devoted to a brainstorming session to identify on flip charts all of the possible methods to control coyotes. Some methods were immediately eliminated from further discussion because they were considered non-selective and/or socially unacceptable. For other methods, the group began identifying the advantages and disadvantages of each method additionally eliminating some methods while retaining others for further consideration. This exercise will be continued at our next meeting.

Methods of Coyote Control Identified by the Deer Predation Working Group:

Methods identified below are presented in no particular order but for discussion purposes are presented in 4 categories.

e. Methods that were immediately eliminated (without any discussion) from further consideration as being nonselective and/or socially unacceptable.

- Poisoning
- Introduction of wolves
- Aerially gunning (especially around large bodies of water)
- Hunting coyotes from snowsleds while under power
- Pit traps

f. Methods that were eliminated from further consideration because the disadvantages outweighed the advantages.

- Bounties – price placed on an animal's head

Advantages

- high public participation

Disadvantages

- cost prohibitive
- fraught with fraud
- high incidental catch
- nonselective in space and time
- method of take is unregulated
- generates a lot of controversy

g. Methods still under consideration.

- Foothold traps

Advantages

- nontargets can be released
- a lot of people know how to use them
- very effective (it is the most effective tool for catching coyotes nationally)
- more socially acceptable than killing snares (will require education and outreach efforts, use of Best Management Practices)
- footholds are the standard because of oversight (BMPs, injury scores)

Disadvantages

- high level of incidental take
 - may not be able to achieve necessary effort to reduce coyotes and affect deer populations (winters in the north)
 - risk of frozen digits
 - harder to keep operational in deep snows
- Cable restraints (nonlethal device) – currently prohibited by the Consent Decree

Advantages

- very effective at catching coyotes in winter when other methods are not
- fairly selective
- freezing digit issues are avoided because of 24-hour tend
- avoids excessive cranial edema
- more socially acceptable than killing snares
- nontargets can be released
- can be used in a very targeted way

Disadvantages

- effort has to be concentrated and maintained to be effective
- may not be able to achieve necessary effort to reduce coyotes and affect deer populations (winters in north)
- still can result in incidental take
- requires a 24-hour tend
- requires a certain level of expertise and training

- cost?

- Cable snares (lethal device)

Advantages

- effective at killing coyotes
- fairly selective
- doesn't require a 24-hour tend
- can be used in a very targeted way

Disadvantages

- requires expertise and training to use
- effort has to be concentrated and maintained to be effective
- live release of nontargets is diminished
- less socially acceptable
- costly
- hunters using hounds have expressed concern for their dogs

- Use of urine (coyote, wolf, or cougar)

Advantages

- nonlethal
- socially acceptable

Disadvantages

- temporary
- true efficacy is unknown
- cost prohibitive
- logistics to apply

h. Methods not discussed before the meeting adjourned. These will be discussed at our next meeting.

- Denning – in most instances this method involves setting foothold traps outside the den and calling or using dogs to catch the adult pair. The lactating young are then removed from the den.
- Sterilization of alpha pairs
- Maintaining the alpha pair in the deer wintering area
- Removing the alpha pair
- Hunting
 - Night hunting
 - Hunting with dogs (recreationally or deployed)
 - Calling

- Open season (currently year round, except Sundays)
- Shooting over bait (recreationally or deployed)
- Award programs

8. Next Meeting: July 30, 2008; 9:00 a.m. – 2:00 p.m. (lunch provided)

Purpose:

- Dana Johnson will bring a variety of traps and demonstrate their use.
- Discuss the advantages and disadvantages of the methods in 7d above toward refining a list of recommended methods for coyote control.
- Develop processes/protocols used by the Department of Inland Fisheries and Wildlife to determine when, where, and how to deploy animal damage control agents.
- Develop a budget for each recommendation.

Appendix 4B

Consent Decree and Order

UNITED STATES DISTRICT COURT FOR THE DISTRICT OF MAINE

ANIMAL PROTECTION INSTITUTE,
Plaintiff,
v.
ROLAND D. MARTIN, In His Official
Capacity as the Commissioner of the Maine
Department of Inland Fisheries and
Wildlife,
Defendant,
U.S. SPORTSMEN'S ALLIANCE
FOUNDATION, NATIONAL TRAPPERS
ASSOCIATION, MAINE TRAPPERS
ASSOCIATION, SPORTSMAN'S
ALLIANCE OF MAINE, FUR TAKERS
OF AMERICA, OSCAR CRONK,
DONALD DUDLEY, ALVIN THERIAULT,
AND BRIAN F. COGILL, SR.
Defendant-Intervenors.

CIVIL ACTION NO.: 06-cv-00128-JAW

CONSENT DECREE AND ORDER

Upon consideration of the Motion for Entry of Consent Decree and Order filed by the parties, it is hereby ORDERED, ADJUDGED AND DECREED as follows:

I. BACKGROUND

1. Animal Protection Institute ("API") brought this suit against Commissioner Roland D. Martin, in his official capacity as the Commissioner of the Maine Department of Inland Fisheries and Wildlife ("IF&W"), under the federal Endangered Species Act ("ESA"), 16 U.S.C. § 1531, *et. seq.* National Trappers Association, U.S. Sportsmen's Alliance Foundation, Maine Trappers Association, Sportsman's Alliance of Maine, Fur Takers of America, Oscar Cronk, Donald Dudley, Alvin Theriault, and Brian F. Cogill, Sr. (the "Intervenors") were granted permission by the Court to intervene as defendants.

2. The parties recognize and the Court, by entering the Consent Decree and Order (the “Decree”), finds that this Decree has been negotiated in good faith; settlement will avoid continued litigation between the parties; settlement of this matter is in the public interest and in accordance with the ESA; and entry of this Decree is fair and reasonable.

II. JURISDICTION

3. This Court has jurisdiction over the parties and subject matter of this Consent Decree pursuant to 28 U.S.C. § 1331 and 16 U.S.C. § 1540(g).

III. APPLICABILITY

4. The provisions of this Decree shall apply to and be binding upon the parties; any successor to Commissioner Martin as Commissioner of IF&W; all IF&W personnel who are subordinate to Commissioner Martin or any successor as IF&W Commissioner; with respect to corporate and organizational parties, their respective officers, directors, successors, affiliates and assigns; and with respect to individual Intervenors, their heirs and assigns.

IV. COMPLIANCE

5. By whatever regulatory means are necessary, including, if necessary, emergency rulemaking procedures, Commissioner Martin shall, prior to October 14, 2007 impose the following restrictions on trapping activities conducted in the geographic area denominated as Wildlife Management Districts (“WMDs”) 1, 2, 3, 4, 5, 6, 8, 9, 10, and 11, as these WMDs are configured on the date of the entry of the Decree (reflected in the map attached as Exhibit A):
 - a. Commissioner Martin shall prohibit the use of all foothold traps (also known as leghold traps) that have an inside jaw spread of more than 5 3/8 inches, except that such traps with an inside jaw spread of more than 5 3/8 inches may be used if they are set so as to be fully or partially covered by water at all times. Commissioner Martin shall require that foothold traps that are permitted (that is, those with an inside jaw spread of 5 3/8 inches or less) be equipped with at least one chain swivel.
 - b. Subject to the exceptions set forth in this paragraph, Commissioner Martin shall prohibit the use of cage traps which have an opening of more than 13 inches in width or more than 13 inches in height. The Commissioner may permit cage traps of any size to be used (1) for wildlife research and survey activities; (2) for the removal of animals that are causing damage to property; or (3) to capture bear.
 - c. Commissioner Martin shall keep in effect the regulation currently in effect on the date this Decree is entered that prohibits foothold and killer-type traps from being set within 50 yards of bait that is visible from above and that permits bait to be used for trapping only if it is completely covered to prevent it from being seen from above, and is covered in such a way as to withstand wind action and other normal environmental conditions. Bait is defined as animal matter including meat, skin, bones, feathers, hair or any other solid substance that used to be part of an animal. This includes live or dead fish. For the purposes of this paragraph, bait

does not include animal droppings (scat), urine or animals, dead or alive, held in a trap as the result of lawful trapping activity.

- d. Commissioner Martin shall keep in effect the regulation currently in effect on the date this Decree is entered that prohibits the setting, placing and tending of any killer-type trap unless set completely underwater or at least 4 feet above the ground or snow level in the manner described in paragraph 5(e) below, except that killer-type traps with an inside jaw spread not to exceed 5 inches may be permitted under the following conditions: (1) when set so as to be partially covered by water at all times, or (2) when set under overhanging stream banks, or (3) when used as blind sets. For purposes of this paragraph, a blind set is defined as any set designed to catch a wild animal, without the use of bait, lure or visible attractor, by intercepting the animal as it moves naturally through its habitat. Bait, lure and visible attractor do not include animal droppings (scat) or urine.
- e. Killer-type traps set at least four feet above ground or snow level may be permitted by Commissioner Martin for use in Wildlife Management Districts 1, 2, 3, 4, 5, 6, 8, 9, 10 and 11 so long as such traps are affixed to a pole or tree that is at an angle of 45° or greater to the ground and that is no greater than 4 inches in diameter at 4 feet above the ground or snow level.
- f. Commissioner Martin shall not permit the use of snares for any purpose other than to catch beaver and bear unless and until IF&W obtains an Incidental Take Permit explicitly authorizing additional uses of snares.
- g. Commissioner Martin shall recommend to trappers that they not set on the ground foothold traps with an inside jaw spread of more than 5 inches that are otherwise authorized by paragraph 5(a) unless such traps are equipped with offset jaws.

6. The following shall apply state-wide:

- a. Commissioner Martin shall maintain a telephone hotline which will be staffed seven days a week, 24 hours per day, during trapping season. Trappers shall be made aware of the hotline and will be advised that they are to call the hotline in the event that a lynx is incidentally captured. When the hotline staff receive a report of an incidentally captured lynx, they shall either dispatch an IF&W employee to the scene to assist in the assessment and release of the lynx, or, if an IF&W employee is not available, shall advise the trapper on how to assess the lynx for any injuries and safely release the lynx.
- b. If any lynx sustains an injury as a result of an incidental trapping, Commissioner Martin shall direct IF&W to be responsible for the rehabilitation of the lynx and for release back into the wild once rehabilitation is complete. In consultation with veterinarians, IF&W shall, by the time the trapping season starts on October 14, 2007, implement and distribute to its staff specific guidelines detailing when a lynx should receive veterinarian attention. Commissioner Martin shall inform API and the Intervenors in writing of any lynx rehabilitation efforts made pursuant to this paragraph.

- c. By the start of the trapping season on October 14, 2007, Commissioner Martin shall establish a network of qualified veterinarians and animal rehabilitators who IF&W can call upon as needed to provide care for injured lynx. Commissioner Martin shall inform API and the Intervenor in writing of the identity of those veterinarians and animal rehabilitators who may be called upon by IF&W.
- d. Commissioner Martin shall direct IF&W to investigate each incidental lynx trapping and will advise the United States Fish and Wildlife Service (“USFWS”), API, and the Intervenor regarding the details of each trapping incident and provide the relevant support and documentation. The Commissioner shall provide to API and the Intervenor only those documents and information that are deemed to be public within the meaning of Maine’s Freedom of Access Act, 1 M.R.S.A. §§ 401-411, and shall provide said information to API and the Intervenor within 14 days of becoming aware of an incident in which a lynx has been incidentally trapped.
- e. Commissioner Martin shall continue to prohibit the intentional trapping and hunting of lynx.

V. EXPIRATION OF DECREE

- 7. If IF&W obtains an Incidental Take Permit for its trapping program, Commissioner Martin shall not be bound by the terms of this Decree during any period when said Permit is in effect. Instead, during any period when such a Permit is in effect, Commissioner Martin shall be bound by the terms of said Permit. An Incidental Take Permit will be deemed to not be in effect if it is vacated, stayed or enjoined by a court of competent jurisdiction.
- 8. If, pursuant to 16 U.S.C. § 1533(d), USFWS promulgates a 4(d) Rule addressing the incidental take of Canada lynx resulting from trapping activities, Commissioner Martin shall not be bound by the terms of this Decree during any period when said 4(d) Rule is in effect in Maine. A 4(d) Rule will be deemed to not be in effect if it is vacated, stayed or enjoined by a court of competent jurisdiction.
- 9. Commissioner Martin may seek from the Court an order terminating this Decree if any of the following actions are taken by USFWS: (1) issuance of an Incidental Take Permit to IF&W for its trapping program; (2) promulgation of a 4(d) Rule addressing the incidental take of lynx resulting from trapping activities; or (3) removal of Canada lynx from protection under the Endangered Species Act. If Commissioner Martin seeks termination of this Decree upon the occurrence of any of these actions taken by USFWS, the Court will terminate this Decree only if it finds that the action has become permanent. For purposes of this paragraph, an action is permanent if it is not subject to any further judicial review or if no judicial review has been sought by anyone (whether or not a party to this Decree) within 90 days of the taking of the action.
- 10. Nothing in this Decree limits the right of any party to seek judicial review of any Incidental Take Permit or 4(d) Rule issued by USFWS.

VI. ENFORCEMENT

- 11. The Court shall retain jurisdiction of this case under 16 U.S.C. § 1540(g) until the termination of the Decree in order to enforce the terms and conditions of the Decree, to

modify or terminate the Decree for good cause shown, and to resolve any disputes arising hereunder.

VII. COSTS OF LITIGATION

12. Pursuant to 16 U.S.C. § 1540(g)(4), API shall be awarded against Commissioner Martin in his official capacity its costs of litigation in this action, including reasonable attorney and expert witness fees (“Costs of Litigation”). Within 30 days of entry of the Decree, API shall provide appropriate documentation of the Costs of Litigation it claims it has incurred in this matter. If an amount of Costs of Litigation cannot be agreed upon by negotiation, the Court shall determine the amount pursuant to 16 U.S.C. § 1540(g)(4). Any request for the Court to determine the amount of API’s Costs of Litigation shall be filed no later than 90 days after the entry of the Decree. The fact that certain attorney fees and costs were incurred by API solely as the result of actions taken by the Intervenor shall not be grounds for failing to include such fees and costs as part of the award against Commissioner Martin in his official capacity.

VIII. GENERAL PROVISIONS

13. This Decree constitutes a settlement by the parties of disputed claims as alleged in the Complaint. Commissioner Martin and IF&W, by entering into this Consent Decree, make no admission of wrongdoing, and expressly deny any liability.
14. The effective date of this Decree shall be the date of its entry.
15. All correspondence concerning this Decree and all documents that are submitted pursuant to this Decree shall be addressed as follows:

As to Plaintiff:

Nicole G. Paquette
Animal Protection Institute
P.O. Box 22505
Sacramento, California 95822

Bruce M. Merrill
225 Commercial Street Suite 501
Portland, Maine 04101
mainelaw@maine.rr.com

As to Defendant:

Christopher C. Taub
Assistant Attorney General
6 State House Station
Augusta, Maine 04333-006
Christopher.C.Taub@maine.gov

As to Intervenor:

James H. Lister

Birch, Horton, Bittner & Cherot
1155 Connecticut Avenue, N.W. Suite 1200
Washington, D.C. 20036
jlister@dc.bhb.com

Barbara A. Miller
Kelley, Drye & Warren
3050 K Street N.W. Suite 400
Washington, D.C. 20007
bmiller@kelleydrye.com

16. The Decree can be executed in counterparts.
17. Nothing in this Decree shall prevent Commissioner Martin from taking additional measures to protect Canada lynx.

IX. CONSENT TO ENTRY OF DECREE

18. Each of the parties consents to entry of this Decree, subject to the Court's approval of this Decree. The undersigned certify that they are fully authorized by the party to enter into the terms and conditions of this Decree and to execute and legally bind the represented parties to it.

Judgment is hereby entered in accordance with this Consent Decree and Order this 4th day of October, 2007.

/s/ John A. Woodcock, Jr.
John A. Woodcock, Jr.
United States District Judge

AGREED AND CONSENTED TO THIS 3RD DAY OF OCTOBER, 2007.

FOR ANIMAL PROTECTION
INSTITUTE

/s/ Nicole G. Paquette
Nicole G. Paquette

COMMISSIONER MARTIN

/s/ Roland D. Martin
Roland D. Martin

FOR NATIONAL TRAPPERS
ASSOCIATION

/s/ Barbara A. Miller
By: Barbara A. Miller
Its: Attorney

FOR U.S. SPORTSMEN'S
ALLIANCE FOUNDATION

/s/ James H. Lister
By: James H. Lister
Its: Attorney

FOR MAINE TRAPPERS
ASSOCIATION

/s/ James H. Lister
By: James H. Lister
Its: Attorney

FOR SPORTSMAN'S
ALLIANCE OF MAINE

/s/ James H. Lister
By: James H. Lister
Its: Attorney

FOR FUR TAKERS OF AMERICA

/s/James H. Lister _
By: James H. Lister
Its: Attorney

/s/Oscar Cronk/James H. Lister

Oscar Cronk
By: James Lister
His: Attorney

/s/ Donald Dudley/James H. Lister

Donald Dudley
By: James H. Lister
His: Attorney

/s/ Alvin Theriault/James H. Lister

Alvin Theriault
By: James H. Lister
His: Attorney

Brian F. Cogill, Sr. By: Barbara A. Miller His: Attorney

Appendix 5

Meeting #2 – July 30, 2008

- Appendix 5A Summary of Meeting #2
- Appendix 5B Best Management Practices for Trapping in the United States
- Appendix 5C Best Management Practices for Trapping Coyotes in the Eastern United States

Appendix 5A

<h1 style="margin: 0;">Deer Predation Working Group</h1> <p style="margin: 0;">Meeting #2 July 30, 2008 MDIFW Headquarters, Augusta 9:00 am – 2:00 pm</p>			
Facilitator:	Mark Stadler	Note Taker / Meeting Summary:	Buster Carter / Sandy Ritchie
Next Meeting: August 20, 2008; 10:00 a.m. – 2:00 p.m. (lunch provided)			
Participants:	<p><u>Working Group Members:</u> Mike Dann, Small Woodland Owners Association of Maine; Doug Denico, Maine Forest Products Council; Wally Jakubas, Maine Department of Inland Fisheries and Wildlife; Dana Johnson, Maine Trappers Association; Gerry Lavigne, Sportsman's Alliance of Maine; Bos Savage, Maine Audubon; Skip Trask, Maine Professional Guides Association Jon Olson, Maine Farm Bureau, was unable to attend.</p> <p><u>MDIFW:</u> Mark Stadler, Wildlife Division Director; Buster Carter, Staff Biologist; and Lee Kantar, Deer and Moose Biologist</p> <p><u>Guests:</u> Gordon Mott and Geri Vistein</p>		
Action Items:	<ul style="list-style-type: none"> • Wally will check to see if there is a USDA approved sterilization agent for canids, in particular coyotes (delivery system, technique, cost, efficacy, and advantages/disadvantages). 		
Agenda – Summary of Meeting Highlights			
<p>The intent of this summary is to capture meeting highlights not to provide a detailed transcript.</p> <p>1. Welcome / Introductions / Review Agenda - Sandy Ritchie was unable to participate. Mark Stadler, Wildlife Division Director, facilitated the meeting and Vasco “Buster” Carter took notes.</p> <p>2. Trapping Devices and Techniques Dana Johnson, President of the Maine Trappers Association, presented an overview of a variety of coyote traps and other captures devices.</p> <p>3. Methods of Coyote Control The Working Group continued its discussion of the advantages and disadvantages of various coyote-control methods, seeking to refine a list of recommended methods for coyote control.</p> <ul style="list-style-type: none"> • Denning – in most instances this method involves setting foothold traps outside the den and calling or using dogs to catch the adult pair. The nursing young are then removed from the 			

den.

Advantages

- removes the entire family group
- removes family groups in the spring when coyotes are heavily preying on deer fawns
- low (minimal) incidental take
- currently legal

Disadvantages

- most use has occurred in western states – not much denning activity has occurred in northeastern forested areas
- questions concerning efficacy because of coyote biology
- low social acceptance
- timing of activity – conflicts with other spring activities (agents would need to be paid)
- pelts are not prime (less incentive)

Discussion

- Gerry Lavigne referenced a study by Messier that denning resulted in a 60% reduction in coyotes.
- Gordon Mott questioned the efficacy of denning and whether there were studies on the actual effect.
- There are research gaps concerning coyote / deer interactions in deer wintering areas.

• **Sterilization of alpha pairs**

Advantages

- reduces coyote recruitment – fewer pups present to be fed deer
- maintaining the alpha pair maintains the territory and excludes other coyotes
- publicly acceptable (non lethal)

Disadvantages

- efficacy
- cost
- manpower
- how would it be accomplished – males/females?
- some would question why coyotes would be released after capture
- if the effort and cost were devoted to sterilization, we would need to limit the take of coyotes either recreationally or by directed control to avoid wasting funds
- closed seasons
- using chemicals in wildlife populations

Questions

- Is there an approved sterilization chemical for coyotes? Canids? What is the delivery system, technique, cost, efficacy, and advantages and disadvantages – Wally will find out.

- What is the impact of sterilization on “natural” coyote ecology, social structure, etc?
- Would we need to sterilize all females – estrus in March?
- Would neutered coyotes still kill deer in winters?
- **Maintaining the alpha pair in the deer wintering area** – assumes “conventional wisdom” of alpha pair excluding other coyotes

Advantages

- limits incidental take
- maintains “natural” predator/prey relationship
- low / no cost

Disadvantages

- reduces coyote hunting and trapping opportunity
- difficult to determine efficacy

Discussion

Maintain status quo

- no coyote hunting or trapping in deer wintering areas
- allow natural predator / prey relationship to operate

- **Removing the alpha pair**

Advantages

- not feeding pups fawns
- removal of most effective hunters

Disadvantages

- breaks down territorial exclusion
- ability to identify the alpha pair

- **Hunting – General Activity** (night hunting, with dogs, calling, general hunting, shooting over bait)

Advantages

- no incidental take
- low / no cost
- widely available activities to all hunters
- hound hunting is very effective in taking coyotes
- more socially acceptable
- provides economic opportunities – guiding, etc.
- perhaps more humane

Disadvantages

- night hunting season is too short / too limited, should extend to 9/1
- may not address coyotes killing deer
- difficult / inefficient to kill large numbers of coyotes
- night hunting and hunting with dogs may not be acceptable to some landowners without permission
- Warden Service may have concerns about extending night hunting to 9/1
- access to deer wintering areas
- built up areas / population areas

Discussion

- MDIFW direct guides and hunters to selected DWAs
- develop additional hunting / recreational opportunities (snowmobiling and coyote hunting, four seasons)

• **Hunting – ADC Activity** (night hunting, with dogs, calling, shooting over bait)

Advantages

- focused / controlled / better to assess results
- no incidental take
- increased effectiveness of deployed ADC agents
- more socially acceptable to have professional / trained ADC agents conduct the work

Disadvantages

- costs
- limited number of people available to hunt with dogs (discussion about dogs in DWAs; snowsled trails)

• **Award programs – privately sponsored**

Advantages

- no cost to the state
- low / no incidental take
- promotes interest in coyote hunting / incentive to hunt coyotes
- may complement other control activities

Disadvantages

- not targeted to coyotes killing deer
- social acceptance?
- ability to kill enough coyotes to lower densities and impact on deer
- fraud / cheating to get award

Discussion

- require tagging so MDIFW has data

4. Next Meeting: August 20, 2008; 10:00 a.m. – 2:00 p.m. (lunch provided), MDIFW in Augusta

Purpose:

- Discuss Deer Task Force recommendations for bear
- Identify various bear control methods and identify the advantages and disadvantages of each method.
- Discuss the interactions between coyote and bear recommendations (advantages and disadvantages)

Appendix 5B

**Trapper Education Manual
A Guide for Trappers in the United States**

Association of Fish and Wildlife Agencies
444 North Capitol Street, NW
Suite 725
Washington, DC 20001
202/624-7890
202/624-7891 fax
info@fishwildlife.org

(Copies available from MDIFW on request)

Appendix 5C

**Best Management Practices for Trapping Coyotes
in the Eastern United States**

Association of Fish and Wildlife Agencies
444 North Capitol Street, NW
Suite 725
Washington, DC 20001
202/624-7890
202/624-7891 fax
info@fishwildlife.org

(View a copy of the report at
<http://www.fishwildlife.org/pdfs/CoyoteBMP.pdf>)

Appendix 6

Meeting #3 – August 20, 2008

Appendix 6A Summary of Meeting #3

Appendix 6B White-tailed Deer Populations in Maine: Past and Present

Appendix 6A

<h1 style="margin: 0;">Deer Predation Working Group</h1> <p style="margin: 0;">Meeting #3 August 20, 2008 MDIFW Headquarters, Augusta 10:00 am – 2:00 pm</p>			
Facilitator:	Sandy Ritchie	Note Taker / Meeting Summary:	Sandy Ritchie
Next Meeting: October 3, 2008; 10:00 a.m. – 2:00 p.m. (lunch provided)			
Participants:	<p><u>Working Group Members:</u> Mike Dann, Small Woodland Owners Association of Maine; Doug Denico, Maine Forest Products Council; Wally Jakubas, Maine Department of Inland Fisheries and Wildlife; Dana Johnson, Maine Trappers Association; Gerry Lavigne, Sportsman's Alliance of Maine; Jon Olson, Maine Farm Bureau; Bos Savage, Maine Audubon; Skip Trask, Maine Professional Guides Association</p> <p><u>MDIFW:</u> Lee Kantar, Deer and Moose Biologist</p> <p><u>Guests:</u> Gordon Mott and Geri Vistein</p>		
Action Items:	<ul style="list-style-type: none"> • Lee and Wally will analyze winter mortality to determine how much we would need to increase adult doe survival (without increasing recruitment) to affect positive population growth. • Jennifer Vashon will review the literature regards targeting adult males in a harvest and its effect on bear reproduction. • Sandy will provide a table of bear population estimates (see last page of meeting summary). 		
Agenda – Summary of Meeting Highlights			
<p>The intent of this summary is to capture meeting highlights not to provide a detailed transcript.</p> <p>1. Welcome / Introductions / Review Agenda</p> <p>Sandy reviewed the agenda and outlined the purpose and desired outcomes of the meeting.</p> <p>2. Sterilization of Coyote Alpha Pairs</p> <p>Wally provided an update to the coyote sterilization discussion that occurred at the last meeting. Sterilizing the alpha pair of coyotes would have two benefits 1) when coyotes do not have to provision their pups they are less likely to prey on deer or other large prey, and 2) the alpha pair continues to maintain their territory (thus excluding transient coyotes) even after they are sterilized. All captured coyotes need to be surgically sterilized to insure sterilization of the alpha pair. Such intensive sterilization of coyotes on a statewide basis, likely would not be practical and may only be useful in targeted areas.</p>			

Although this coyote control technique has proven very effective with sheep depredation in seasonal experiments, its efficacy for year-round protection has not been tested. During the summer grazing season, coyote groups that were not sterilized killed six times as many sheep as sterilized coyote groups.

In western states, coyotes were captured using helicopters. The cost for capturing and surgically sterilizing a coyote was approximately \$560. This compares to \$185 to shoot a coyote from a fixed-winged aircraft or \$805 to trap a coyote.

When asked if there was a sterilant we could give coyotes that wouldn't require capturing them, Wally indicated that this has been investigated since the 1960s and there were no sterilants being used at this time. The bottom line is that sterilization is not feasible at this time.

Skip: If there were a device that could sterilize coyotes without the need to capture them, would it be specific to coyotes?

Wally thought not and that fox and potentially other species could be sterilized as well. When asked if lynx were susceptible to sterilization by this method, Wally didn't think so.

Gerry: To clarify, once sterilized, coyotes sought fawns less because they didn't have to provision a den. So there is application for spring fawning in Maine.

Gerry: Would territoriality around DWAs break down if alpha pairs switched their prey base from deer to snowshoe hare?

Wally: Serum chemistries suggest that coyotes actually do better when feeding on hare.

Bos: The density of hares and difficulty in catching them will play a role.

Gerry: When snows are soft and deep, coyotes may have to become obligate predators on deer. That is when territoriality may break down.

Gordon Mott and Geri Vistein suggested that research was needed and urged the exploration of alternative sources of funding.

3. White-tailed Deer Populations in Maine: Past and Present

Lee Kantar presented a powerpoint program highlighting changes to Maine's deer population over time. A copy of his presentation is attached.

4. Northern and Eastern Maine Deer Task Force – Bear Predation Recommendation

The Northern and Eastern Maine Deer Task Force's bear predation recommendation was for MDIFW to evaluate the need and consequences of reducing the bear population in northern and eastern Maine during the short-term strategy period (present day-2025) to allow the deer population to recover [reduced fawn predation] and consider accomplishing this by increasing the length of the bear season [requires agency rule-making], increasing the bear bag limit [requires legislation], reinstating the spring bear hunt [requires legislation] with a "cub law," or other strategies appropriate to achieve the desired population reduction. Any decision must be integrated with the work of a species planning work group being established by MDIFW later this year.

5. Bear Predation on Deer

Wally and Jennifer Vashon (via phone) led a discussion and responded to questions concerning bears as a predator of deer.

Wally: There is no question that throughout North America, bear is an important predator of ungulate neonates (less than 12 months of age). The degree of predation seems to vary across the landscape with bears accounting for 20% - 60% of fawn mortality. In all cases, bears are a significant factor in fawn mortality.

M.L. Wilton, Ontario Ministry of Natural Resources reports "There can be little doubt in anyone's mind after examining the literature that the black bear not only is highly capable of capturing and killing young cervids, but indeed has done this to such an extent in some areas as to constitute a major factor limiting cervid populations. Moreover black bear predation on young cervids appears to have been witnessed by a sufficient number of individuals to indicate that it occurs to a greater or lesser extent across the entire range of the black bear in North America."

Jon: How does Maine's bear population compare with other states?

Wally: Maine has one of the highest bear populations in the lower 48 states.

Gerry: What is the ideal adult sex ratio important to bear reproduction?

Jennifer: 60 females:40 males

Gerry: If we targeted adult males would it affect bear reproduction?

Jennifer: Didn't know but will check the literature.

Gerry: What has been the bear population trend since the 1970s?

Jennifer: Population estimates during the 1970s (6,000-10,000 bears) were not as good as today's estimates. In September 1980 the Commissioner ordered an emergency closure of the bear season after the season harvest (through November) was projected to greatly exceed the management objective of 800-1,000. It was later determined that population estimates in the 1970s grossly underestimated the number of bears in Maine. Today's population estimate is probably 50% higher than in the 1970s.

Doug asked that MDIFW provide the Working Group with a table of bear population estimates (see last page of the meeting summary).

Gerry: Estimates of mortality loss are based on changes in indices rather than counting dead fawns. We don't have information on how many fawns are killed by bears vs. coyotes.

Gerry: A study in Acadia National Park by Dan Harrison found that the fawn loss rate was high due to coyotes, illegal kill, and drowning. That is the only research on fawns in Maine.

Gerry: Research conducted by Dan Harrison in Cherryfield found a large amount of deer in coyote stomachs, and a high percentage of the deer was fawns.

Lee: In New Brunswick coyotes and bears prey on fawns pretty equally.

Wally: In Minnesota 60% of fawn predation is by bear.

Geri: How does habitat change affect Maine's bear population?

Jennifer: Higher reproductive rates and higher weights are attributed to higher amounts of soft mast.

Gerry: Are bears getting older as the population increases?

Jennifer: We're not collecting teeth from harvested bears anymore, but will begin again soon. We could use ages from study bears, but it would be skewed toward males.

Bos to Jennifer: If you were asked to choose a method to reduce Maine's bear population to address deer concerns, which method would you choose?

Jennifer: Given that most bears are harvested over bait and in the first and second weeks of the season she would increase the bag limit (via permit system) but would need to do some modelling to determine what level of harvest we could allow.

Wally: Would hunters want a permit to harvest a female bear?

Jennifer: 45% of the harvest is comprised of females. Females are hard to differentiate between subadult males. Jen thinks hunters would harvest solo females but probably not females with cubs.

Jennifer: Canadian spring hunts require hunters to elevate baits forcing bears to stand so that hunters can determine sex.

Doug: If we wanted to kill more bears, would we need more bait sites?

Jennifer: We would need to discuss the number of bait sites with guides and landowners. There has been a decrease in bear hunters likely as a result of the economy and rising permit fees. We need to consider what it costs for a hunter to hunt bear.

Lee: We could implement a bear harvest increase in one area and use an adaptive management approach over time.

Skip: We can increase the harvest, but it probably wouldn't increase the number of bear hunters.

Jennifer: Thinks we can improve our marketing of bear hunting to make it more attractive to resident bear hunters.

Wally to Skip: Would a 2-bear bag limit attract more hunters. Skip didn't think so.

Gerry: Once a bear is taken from a stand, it reduces the likelihood that other bears would come to that stand.

Jennifer: We would need to run more baits and move hunters around.

Gerry: That would assume that we could expand the number of baits – area is not saturated.

Skip: Guides only use ~ 50% of their baits. We wouldn't need to increase the number of bait sites.

Jennifer: If we were to implement methods to reduce Maine's bear population to benefit deer we would be the first state to do so. We would be decreasing one population to benefit another. Could we achieve a higher bear harvest objective, and would we achieve a deer population increase? We will need to document effectiveness for a bear population reduction to be socially acceptable.

6. Methods of Bear Control

The remainder of the meeting was devoted to a brainstorming session to identify on flip charts methods to control bear predation. For each method we began identifying advantages and disadvantages.

- Increase the length of the fall baiting and/or hound seasons
- Increase the bag limit
- Implement a spring bear season
- Increase the length of the trapping season
- Lower fees and/or waive permits to increase participation
- Increase participation by eliminating the guide requirement for aliens
- Increase marketing of bear hunting in Maine by MDIFW, Department of Tourism, others

We began fleshing out the advantages and disadvantages of a spring bear season.

Spring Bear Season

Advantages

- reduces the number of bears before they would prey on fawns
- targeting males may achieve a deer objective without a major impact to the bear population

Disadvantages

- socially unacceptable
- legislature won't support it
- debate in the legislature could gut the current season
- any reduction in the bear population will have a public expectation to determine effectiveness, which could prove very costly

Bos: Would like to eliminate a spring season from discussion.

Gerry: Would like to keep a spring season on the table for discussion for now and fully flesh out the advantages and disadvantages.

Skip: The only way he could support a spring bear hunt is with a research study, plan, and monitoring process to determine effectiveness.

Geri Vistein agreed with Skip and suggested a similar effort for coyotes.

Wally: There will be a public expectation that what we are doing is working. This could be very costly.

Discussion of a spring bear season led to a broader discussion of the need and consequences of reducing the bear population (and in some respects coyote) in order to affect a change in deer numbers. It was agreed that we needed to have a "need and consequences" discussion before proceeding further. With the allotted time for the meeting running out, MDIFW suggested it run an analysis of winter mortality

to determine how much we would need to increase adult doe survival (without increasing recruitment) to affect positive population growth. This would help frame a “need and consequences” discussion at our next meeting.

7. Next Meeting: October 3, 2008; 10:00 a.m. – 2:00 p.m. (lunch provided), MDIFW in Augusta

Appendix 6B

White-tailed Deer Populations in Maine: Past and Present

**WHITE-TAILED DEER
POPULATIONS IN MAINE:
PAST AND PRESENT**

Lee Kantar
State Deer and Moose Biologist
Wildlife Resource Assessment Section
Maine Department of Inland Fisheries and
Wildlife

**Changes to population over
time: considerations**

- Habitat at the landscape scale
- Habitat at the home range scale
- Annual versus long-term changes:
 - in productivity/recruitment/mortality
- Additive mortality factors

In other words...

- **Site potential-soils, growing period, available seral stages: affects how many deer a unit area can hold**
- **Land-use history**
- **Human exploitation**

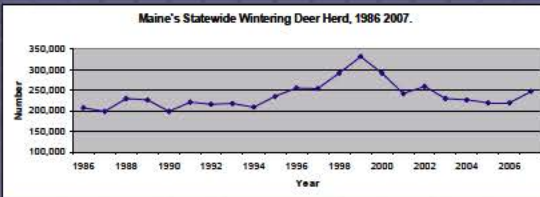
MORTALITY

- **Chronic and traumatic mortality**
- **Chronic (natural-indirect)**
 - **Malnutrition, parasitism, old age, some diseases**
- **Traumatic (direct)**
 - **Hunting, predation, accidents, severe winters, virulent disease**

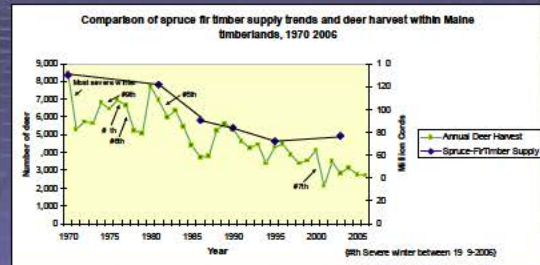
POPULATION GROWTH

- **Can be influenced by multiple causes**
- **Sex and age have different vulnerabilities**
- **Relationship between deer and environs is dynamic**

STATEWIDE ESTIMATED DEER POPULATION 1986-2007

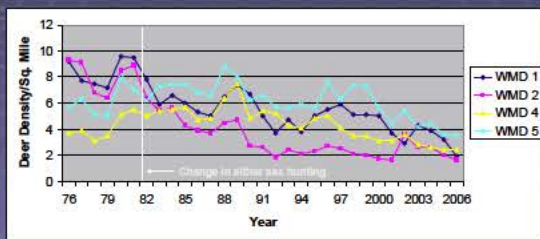


MAINE TIMBERLANDS



1976-1982-either sex hunting
1982 height of deer hunting participation

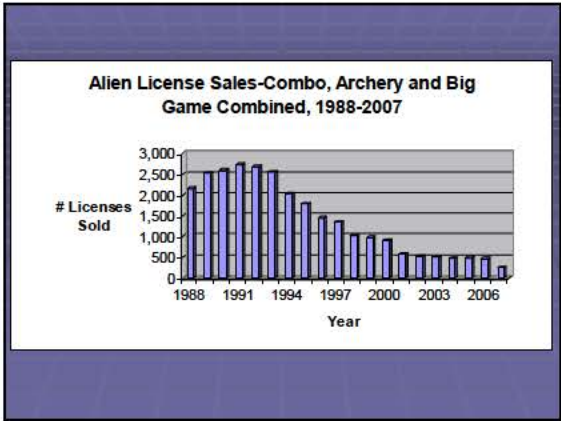
FOREST INTERIOR DEER DENSITY ESTIMATES 1976-2007

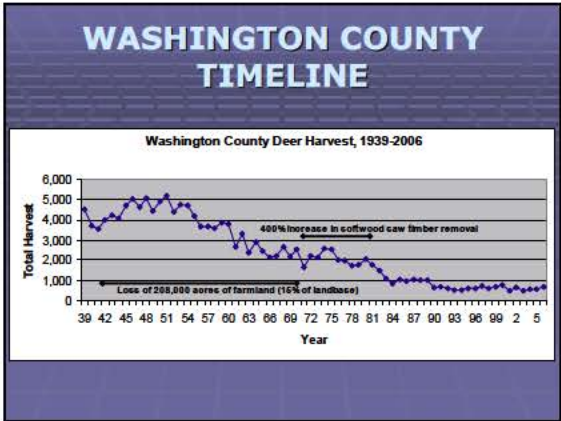


Changes in forest composition, increased roading/access, either sex hunting

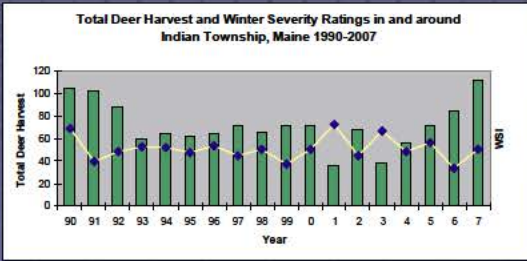
Estimated Deer Densities by Year, Northern and Eastern WMDs

WMD	1976	1986	1996	2006
1	9.2	5.3	5.5	1.9
2	9.3	3.9	2.7	1.6
4	3.7	4.7	5	2.4
5	5.7	6.8	7.6	3.5
7	6	6.9	7.3	6.5
8	2.9	4.8	6	3.4
9	3.6	2.7	3	3.8
10	4	5.2	4	2.7
18	6.1	8.1	7.8	4.9
19	5.5	4	2.6	3.3
27	8.7	7.7	8.8	6
28	6.3	3.6	3.4	3.7
29	7.2	4.1	4	
3	2.5	2.3	2	3.5
6	2.9	2.3	2.8	4.7
11	4.7	8.5	5.5	5.7





WMD 19 HARVEST AND WSI



Appendix 7

Meeting #4 – October 9, 2008

Appendix 7A Summary of Meeting #4

Appendix 7B Analysis of Deer Population Growth and Predation Effects

Appendix 7A

<h1 style="margin: 0;">Deer Predation Working Group</h1> <p style="margin: 0;">Meeting #4 October 9, 2008 MDIFW Headquarters, Augusta 10:00 am – 2:00 pm</p>			
Facilitator:	Sandy Ritchie	Note Taker / Meeting Summary:	Sandy Ritchie
Next Meeting: December 3, 2008; 10:00 a.m. – 2:00 p.m. (lunch provided)			
Participants:	<p><u>Working Group Members:</u> Mike Dann, Small Woodland Owners Association of Maine; Doug Denico, Maine Forest Products Council; Wally Jakubas, Maine Department of Inland Fisheries and Wildlife; Dana Johnson, Maine Trappers Association; Gerry Lavigne, Sportsman’s Alliance of Maine; Jon Olson, Maine Farm Bureau; Bos Savage, Maine Audubon; Skip Trask, Maine Professional Guides Association</p> <p><u>MDIFW:</u> Lee Kantar, Deer and Moose Biologist; John DePue, Furbearer Biologist</p> <p><u>Guests:</u> Gordon Mott and Geri Vistein</p>		
Action Items:	Wally will analyze the feasibility of a Deer Predator Control Study.		
Agenda – Summary of Meeting Highlights			
<p>The intent of this summary is to capture meeting highlights not to provide a detailed transcript.</p> <p>1. Welcome / Introductions / Review Agenda</p> <p>Sandy reviewed the agenda and outlined the purpose and desired outcomes of the meeting.</p> <p>2. An Analysis of Deer Population Growth and Predation Effects – Lee Kantar, MDIFW Deer and Moose Biologist, presented a powerpoint program and led a discussion in an attempt to answer two questions:</p> <ul style="list-style-type: none"> c. In the absence of winter predation of deer by coyotes, how would the population respond? d. If predator control can reduce deer mortality and foster growth, how long would it take the deer herd to grow? <p>A copy of Lee’s presentation is attached.</p> <p>3. Deer Predator Control Study – Lee’s presentation led to a lively debate among working group members concerning the merits of conducting a Deer Predator Control Study. By the end of the meeting</p>			

nothing was resolved. At the Working Group's request, MDIFW agreed to provide an analysis of the feasibility of a Deer Predator Control Study for discussion at the next meeting.

4. Next Meeting: December 3, 2008; 10:00 a.m. – 2:00 p.m. (lunch provided), MDIFW in Augusta.

Appendix 7B

**AN ANALYSIS OF
POPULATION GROWTH AND
PREDATION EFFECTS**

Lee Kantar
State Deer and Moose Biologist
Wildlife Resource Assessment Section

QUESTIONS

In the absence of winter predation of deer by coyotes how would the population respond?

If predator control can reduce winter mortality and foster growth, how long will it take the deer herd to grow?

IN QUESTION

- **Compensatory versus additive mortality by coyotes, or in other words...**
 - **Do coyotes kill deer that were going to die anyways or...**
 - **Do coyotes kill deer that would have survived to contribute to future reproduction, etc...or....**
 - **Is there some combination of these circumstances**

WMD 1 Mortality/Recruitment Balance

- **For positive population growth you need to recruit more fawns into the fall herd, then deer that died**
- **In 2007-08, estimated fawns in November was 74:100 adult does comprised of 35 female fawns:100**
- **Allowable mortality of adult does was 26%**
- **At this rate mortality loss equals recruitment gains and there is no population growth**

ASSUMPTIONS

- **Coyotes can be effectively controlled within a WMD/DWA to minimize (negate) predation losses**
- **Coyote predation on deer is linearly related to winter severity (more severe conditions more deer are killed)**

ASSUMPTIONS

- All cause winter mortality accounts for ~90% of annual all-cause mortality
- Predation comprises 10-50% of winter mortality
- Loss of deer is ~proportional to sex/age structure of herd

All-Cause Adult Female Mortality

- Varies from 18% (biological low) to ~30% statewide
- 07-08 ACAMF ~28% in WMD 1
- Predation as% of ACAMF →

Predation Rate ↓	ACAMF
At 10-12%	2.8
At 25%	6.3
At 50%	12.6

ANALYSIS STEPS

- Started with data on WMD 1, current wintering population size and age structure
- Calculated # of dead deer by sex and age by proportion represented in the herd
- Used range of predation rates by coyotes from research in Maine, New Brunswick and Quebec
- Recruitment and productivity rates were not changed

STEP 1: Sex age composition of WMD 1

2007-08	Adult Bucks	Adult Does	Female fawns	Total fawns	Total Wintering Deer
WMD1	646	896	311	660	2202

STEP 2: Proportion of herd:

Proportion of wintering herd			
Adult bucks	Adult Does	Female Fawns	Total Fawns
.29	.41	.14	.30

**MORTALITY REDUCTION AND POP GROWTH
@ 2-3% ANNUAL INCREASE
SURVIVAL**

% Increase in Annual Adult Doe Survival					
2008	2009	2010	2011	2012	2013
2-3%					
1.7	1.8	1.9	2.0	2.2	2.3
0.06	0.06	0.06	0.06	0.06	0.06

**MORTALITY REDUCTION AND POP GROWTH
@ 6% ANNUAL INCREASE
SURVIVAL**

% Increase in Annual Adult Doe Survival					
2008	2009	2010	2011	2012	2013
6%					
1.9	2.3	2.7	3.2	3.8	4.5
0.19	0.19	0.19	0.19	0.19	0.19

**MORTALITY REDUCTION AND POP GROWTH
@ 10% ANNUAL INCREASE
SURVIVAL**

% Increase in Annual Adult Doe Survival					
2008	2009	2010	2011	2012	2013
10%					
2.2	3.0	4.2	5.7	7.9	10.8
0.38	0.38	0.38	0.38	0.38	0.38

**IF MORTALITY REDUCTION/SURVIVAL IS
VARIABLE
ESTIMATED POP'N GROWTH**

% Increase in Annual Adult Doe Survival					
2008	2009	2010	2011	2012	2013
1.7-2.2	1.9-2.9	2.0-3.6	2.4-4.7	2.6-5.1	2.9-6.7

In other words, if predator control success varies each year

Appendix 8

Meeting #5 – December 18, 2008

- Appendix 8A Summary of Meeting #5
- Appendix 8B Feasibility of a Deer Predator Control Study
- Appendix 8C Feasibility of a Deer Predator Control Study: Background Information
- Appendix 8D Possible Options for Addressing LD 2288, Resolve To Create a Deer Predation Working Group

Appendix 8A

<h1 style="margin: 0;">Deer Predation Working Group</h1> <p style="margin: 0;">Meeting #5 December 18, 2008 MDIFW Region B Headquarters, Sidney 10:00 am – 2:00 pm</p>			
Facilitator:	Sandy Ritchie	Note Taker / Meeting Summary:	Sandy Ritchie
Next Meeting:			
Participants:	<p><u>Working Group Members:</u> Mike Dann, Small Woodland Owners Association of Maine; Doug Denico, Maine Forest Products Council; Wally Jakubas, Maine Department of Inland Fisheries and Wildlife; Dana Johnson, Maine Trappers Association; Gerry Lavigne, Sportsman's Alliance of Maine; Skip Trask, Maine Professional Guides Association</p> <p><u>MDIFW:</u> Lee Kantar, Deer and Moose Biologist; John DePue, Furbearer Biologist</p> <p><u>Guests:</u> Gordon Mott and Geri Vistein</p>		
Action Items:	<p>Sandy will developed a draft report outlining the deliberations and recommendations of the Deer Predation Working Group and forward the draft to the Working Group members for review and the opportunity to provide any additional comments or thoughts.</p>		
Agenda – Summary of Meeting Highlights			
<p>The intent of this summary is to capture meeting highlights not to provide a detailed transcript.</p> <p>1. Welcome / Introductions / Review Agenda</p> <p>Sandy reviewed the agenda and outlined the purpose and desired outcomes of the meeting.</p> <p>2. Feasibility of a Deer Predator Control Study – Wally led a discussion of the feasibility of a Deer Predator Control Study. At the conclusion of Wally's presentation, there was consensus among Working Group members not to recommend a Deer Predator Control Study because it would be expensive and impractical under current budget restrictions (though a minority of members thought MDIFW's cost estimates were too high), and we could not control enough variables to provide definitive cause and effect results. As such, the outcomes of a study would always be questioned. Many agreed, however, that if money and effort was no object, a study could provide a body of needed research.</p> <p>3. Possible Options for Addressing the Legislative Resolve – Drawing from the information and discussion from the previous meetings and to serve as a springboard for developing recommendations, MDIFW developed a list of possible options for the Working Group to consider to arrive at common, recommended strategies to address coyote and bear predation of deer and reduce predation impacts on</p>			

deer survival and recruitment (attached).

4. Recommendations of the Deer Predation Working Group

Coyote Predation of White-tailed Deer

It was the consensus of Deer Predation Working Group members to make the following recommendations. Recommendation C was the group's primary recommendation, but members recognized that it will take a period of time (estimated at 2-3 years) to develop and administer if successful. To address coyote predation of deer in the interim they proposed Recommendations A and B.

A. An Animal Damage Control Program that utilizes shooting coyotes over bait and hunting coyotes with dogs: This activity would be focused, controlled, and selective; it will not result in any incidental take of nontarget species; and it will not require an Incidental Take Permit (ITP) in areas with lynx. Though there was consensus in making this recommendation, there was not consensus that these methods would be effective in achieving the necessary reduction in coyotes to promote an increase in the deer population, or that funds to implement a program would be well spent.

The Working Group did not support controlling coyotes by denning (i.e., killing the adult coyotes and then dispatching the pups in the den or leaving them to die) because denning does not target specific concentrations of deer; it may also be unacceptable to the public.

Shooting coyotes over bait and hunting coyotes with dogs are not without challenges, including:

- Logistical impediments, especially in remote areas with deep snows.
- Potential for disturbance to deer in wintering areas.
- Any large scale coyote control effort would have to be maintained through time.
- It is unlikely that sufficient effort could be applied to reduce coyote predation on deer.
- There are a limited number of people available to hunt coyotes with dogs.
- It will be costly to implement, though there was not consensus among Working Group members as to how costly. [MDIFW estimated that to fully compensate ADC agents for their efforts, it would cost approximately \$38,000 to implement coyote control in one deer wintering area for three months. (According to John Forbes of the USDA, the standard USDA cost for ADC work - personnel time, equipment and gas - is \$35/hr and likely would be more for this program). Some Working Group members took issue with the cost estimates suggesting the figures were too high.]

The Working Group was unanimous that funds to implement an ADC program be new funds and not come from the Department's existing revenues.

A general outline of an ADC program is presented below.

Where ADC Activity Would Occur: Hunting coyotes with dogs and shooting coyotes over bait would occur in actively-used deer wintering areas (DWAs) within wildlife management districts where the deer population is below population objectives, and in DWAs where landowners are managing deer

wintering habitat using DWA Best Management Practices (BMPs). ADC activity may occur in areas not meeting the above criteria only upon demonstrated need and at the discretion of the regional wildlife biologist.

Animal Damage Control Agents: Qualified persons must hold a valid hunting license and be proficient in the use of methods relevant to their activity. Once the district warden and regional wildlife biologist are satisfied with a person's competency and understanding of the program, that person can register as an ADC agent for the activities in which he/she is proficient. Additional activities can be added upon approval of MDIFW's Wildlife Management Section Supervisor.

ADC certification must be renewed every two years, during which time an agent must attend one regional training session and submit monthly ADC activity reports. Registered ADC agents are considered "Agents of the Commissioner" and perform ADC work under the direction of a Department official.

Deployment: Deployment is an explicit action by MDIFW, through the Regional Wildlife Biologist, that authorizes an ADC agent to operate in a given area to perform coyote control duties in areas meeting the above criteria.

Regional staff will participate in training programs and carry out deployment and certification procedures according to Department policy.

The Regional Wildlife Biologist will maintain a regional map depicting the location of all coyote control activity within his/her region.

Accountability: ADC agents are responsible for adhering to the provisions of the Department's ADC policy.

Reporting: All coyotes must be reported at least monthly on Department ADC reporting forms. Monthly reports must be received at the appropriate regional wildlife headquarters as follows: coyote control activities for the month of December must be reported to the Department by 10 January; for January by 10 February; for February by 10 March; and for March by 10 April. An ADC agent will lose his/her certification for failure to submit complete and accurate reports as scheduled.

- B. Promote coyote hunting and trapping – the Maine Department of Inland Fisheries and Wildlife will work with sportsmen's groups, registered Maine Guides, and others to better promote coyote hunting and trapping.
- C. There is a body of research and experience indicating that cable restraints are the most appropriate tool to use in areas with lynx; therefore, the Working Group recommends that MDIFW implement an Animal Damage Control Program using cable restraints with a 24-hour tend requirement. This activity will require an Incidental Take Permit in lynx areas.
- An ITP for Department-directed Animal Damage Control activities using cable restraints would not be pursued until and unless the pending ITP for Maine's trapping program is favorably resolved.
 - It would take a minimum of 18 months to write an ITP and undergo review/approval by the USFWS.
 - An ITP is costly to prepare (estimated at \$13,000 for staff time alone) and if approved would

be costly to implement, though there was not consensus among Working Group members as to how costly. [MDIFW estimated that to fully compensate ADC agents for their efforts, it would cost approximately \$38,000 to implement coyote control in one deer wintering area for three months. (According to John Forbes of the USDA, the standard USDA cost for ADC work - personnel time, equipment and gas - is \$35/hr and likely would be more for this program). Some Working Group members took issue with the cost estimates suggesting the figures were too high.]

The Working Group was unanimous that funds to implement an ADC program be new funds and not come from the Department's existing revenues.

There was consensus among Working Group members not to recommend a Deer Predator Control Study because it would be expensive and impractical under current budget restrictions, and we could not control enough variables to provide definitive cause and effect results. As such, the outcomes of a study would always be questioned. Many agreed, however, that if money and effort was no object, a study could provide a body of needed research.

A minority of Working Group members supported taking no action to control coyotes for several reasons: the lack of appropriate tools, effectiveness of coyote control methods, difficulties of late winter coyote control activity, uncertainty that sufficient effort could be applied to reduce coyote predation on deer, and cost to administer and implement a coyote control program. These members emphasized that the most important issues limiting deer population growth in northern and eastern Maine are the decline in the number of deer wintering areas, the diminished quality of many deer wintering areas, and fragmentation of the forest landscape that may interfere with deer movement to traditional DWAs. They contend that efforts to increase deer numbers should focus on improving the quality and quantity of deer wintering areas until there is greater evidence that predator control can be effective.

Bear Predation of White-tailed Deer

It was the consensus of Deer Predation Working Group members to recommend:

Taking no bear control action, because:

- Bears are important to Maine's economy: A significant increase in the bear harvest and a greatly reduced bear population may undermine the economic contribution that bears provide to Maine's rural economy.
- Increasing the bear harvest by expanding current seasons, adding new seasons, and/or increasing bag limits may not be acceptable to the public, and debate could threaten Maine's current bear regulations, which could undermine the state's bear management program, hunting and trapping opportunity, and the economic contribution that bears provide to Maine's rural economy.
- Determining the effectiveness of bear population control would require the same level of study as for coyotes. Such a study 1) would be expensive and impractical under current budget restrictions, and 2) we could not control enough variables to provide definitive cause and effect results. As such, the outcomes of a study would always be questioned.

One Working Group member suggested MDIFW work to achieve its current bear population objective to stabilize the population at no less than 1999 levels through annual hunting and trapping harvests. Since

1990, Maine's bear population has increased at least 28%. To achieve the current population objective may require innovative changes in harvest regulations to generate the increased harvest needed to reduce the population and may be in conflict with the consensus of the Working Group.

5. LD 2288 Report to the Legislature - Sandy will developed a draft report outlining the deliberations and recommendations of the Deer Predation Working Group and forward the draft to the Working Group members for review and the opportunity to provide any additional comments or thoughts before submitting a final report to the Joint Standing Committee on Inland Fisheries and Wildlife.

Appendix 8B

Feasibility of a Deer Predator Control Study

Deer Predation Working Group Meeting

December 18, 2008

Study Objectives

Determine whether coyote control methods can be deployed in a manner that will increase deer numbers in areas of the state where the current deer population is below management objectives.

What are the questions we need to answer?

1. What method(s) will be used to control coyotes in the study?
 - What tools are available, effective, and acceptable to use for coyote control?
 - How much effort (personnel or contractor time) should be deployed?
 - Who will do it and at what price?
 - How much money can we spend to achieve coyote control on a given size area?
2. Where can the study be done to assure that the results will be applicable to other areas of the state?
3. How can we measure an increase in the deer population or deer densities?
 - Direct counts or surveys of the deer population
 - Changes in survival (e.g., year round survival of adults and/or the number of deer surviving from birth to reproductive age).
 - Change in an index that reflects the density of deer in an area (e.g., deer pellet counts, number of deer harvested).
 - Which of the above 3 methods is the most appropriate for this study?
4. What size of area do we want to achieve coyote control on? Should it be focused on specific DWAs, WMDs, or regions?
5. How much would deer survival or the population have to increase to conclude that predation control was successful?
 - Percent increase in survival rates?
 - Percent change in deer densities?

Study Design 1

Direct counts or surveys would be used to determine the number of deer in an area before and after coyote control.

1. What tools are available for coyote control? (This question applies to all study designs)

Tools currently available: hunting with hounds, recreational trapping, shooting over bait, calling and shooting, and denning.

ISSUES:

- If trapping or snaring is used around DWAs in Northern Maine from February to April the Department should consider pursuing an ITP for the activity.
 - It is uncertain if an ITP for late-winter trapping or snaring would be granted by the USFWS
 - Logistics of late winter trapping would be difficult and trapping efficiency would be low (e.g., melt-out and freeze-up of traps; travel to DWA, housing)
 - Trapping would be costly approximately \$114,000 for 3 DWA / year (i.e., \$38,000 / DWA to deploy two trappers for three months)
 - Hunting coyotes over bait may not control coyote numbers sufficiently around deer yards to increase deer survival.
 - Denning coyotes may have public relations implications for hunters and trappers.
 - Denning could not be used to protect concentrations of deer and it does not address fawn predation by black bear and bobcat.
2. Where can the study be done to assure that the results will be applicable to other areas of the state?

Study should be done in northern Maine in DWAs.

ISSUES:

- Impact of coyote control may be difficult to measure in Downeast Maine. Deer harvest rates, and likely deer populations, have been increasing in WMD 19 and other Downeast WMDs since about 2003.
 - Winter severity conditions in Downeast Maine are not comparable to Northern Maine.
 - Access levels should be similar in the study area and the area where coyote control would be deployed.
 - It would be difficult to separate out the effects of snaring (being practiced in WMD 19) from other coyote control methods.
3. How can we measure an increase in the deer population or deer densities?

Monitoring deer densities could be done directly using aerial surveys (double-count technique as employed in New Brunswick, Canada).

Winter survival could be estimated by determining deer densities at the beginning and end of deer-yarding period. Changes in regional deer densities could be estimated by determining the average deer density of the WMDs that encompass the DWAs being studied.

ISSUES:

- It would be necessary to monitor deer on sites with and without predator control at the same time to account for changes in the vulnerability of deer to coyote predation due to winter severity.
- Replication of study sites would be required for valid results.
- The study would have to be conducted for several years to determine the range of results under different levels of winter severity.
- Changes in predation rates could only be indirectly inferred from changes in deer densities.
- Changes in deer densities at the DWA or WMD level that occurred because of landscape changes (e.g., DWAs cut, forest fragmentation, short stopping because of logging operations, winter feeding) would confound any interpretation of the effects of predator control on deer densities.
- We would not be able to distinguish animals that died from coyote predation from animals that died from other causes (starvation, poaching, other predators, disease).
- This study design assumes that post-winter survival is the same among deer from different deer-yards. We do not know where deer in a given yard disperse to during the rest of the year.
- Costs \$438,606 for 3 years (includes coyote control on 3 DWAs).

Paired study design, using 3 replicates (i.e., 3 DWA would receive coyote control and 3 DWA would not)					
Deer Density Survey Study Costs					
Helicopter time @ \$630 /hr one 6 hr day to do 6 DWAs. This would be done January & April each year for 3 years	6		\$630	\$22,680	
Helicopter time to Census 2 WMAs once a year for 3 years (may be an underestimate of cost e.g., moose census costs \$50,000/WMD)	24		\$630	\$45,360	
3 Experienced observers for helicopter flights	36	3	\$35	\$11,340	
Per Diem for a crew of 4 @ \$100 / day	8	4	\$100	\$9,600	
Bad Weather day 1 day every year	1			\$6,070	
				Subtotal	\$95,050
				Per Year	\$31,683
Coyote Control for 3 DWA					
Coyote Control trappers @ 3 mo year	3 years	6	\$22	\$228,096	
6 Trucks for field crews w/ gas for 3 mo for 3 years		6	\$7,000	\$31,500	
Traps @ \$14 for 1.75		100	14	1400	
Snowmobiles		6	\$6,500	\$39,000	
Snowmobiles Maintenance and Gas @ \$500 /sled /yr and \$640 mo gas @ \$32/day for 20 days/mo	3 months fr	6		\$43,560	
				Subtotal	\$343,556
				Per Year	\$114,519
				Study Total	\$438,606
				Per Year	\$146,202

Study Design 2

Radiocollar adult does and fawns to estimate survival rates, effects on recruitment (i.e., the number of fawns surviving to breed), predators responsible for mortalities, and timing of predation.

1. How can we measure an increase in the deer population?

We can infer from changes in recruitment rates and adult survival whether a population is increasing or decreasing.

ISSUES:

- It would be necessary to monitor deer on sites with and without predator control at the same time to account for changes in the vulnerability of deer to coyote predation due to winter severity.
- Replication of study sites would be required for valid results.
- The study would have to be conducted for several years to determine the range of results under different levels of winter severity.
- This study design could be used to determine predation rates by various predators and how these rates vary throughout the year on adults and fawns. (Extra cost - \$69,000/yr)
- Costs ~ \$1,996,000 for a 3 year study.

**Paired study design, using 3 replicates (i.e., 3 DWA would receive coyote control and 3 DWA would not)
Deer Radiotelemetry Study Costs**

Description of Item	Quantity	Rate	3 yr Cost		
GPS collars for 20 deer per DWA	120	\$1,900	\$228,000		
Refurbishing GPS collars for 2 years	120	\$10	\$2,400		
6 Trucks for field crews w/ gas	6	\$7,000	\$42,000		
Snowmobiles	6	\$6,500	\$39,000		
Snowmobiles Maintenance and Gas @ \$500 /sled /yr and and \$640 mo gas @\$32/day for 20 days/mo	6		\$55,080		
Field crews 2 limited period workers per paired site & volunteers (very light staffing) @ \$22/hr	6	\$22	\$823,680		
Deer capture crews winter only & volunteers @ \$14/hr	6	\$14	\$96,768		
Volunteer Stipends @ \$75 / wk	6	\$75	\$12,150		
Flight Contract at approx. \$40,000/yr	3 years	\$40,000	\$120,000		
Clover traps	30	\$300	\$9,000		
Housing @ \$500/mo	3 camps	\$500	\$18,000	Subtotal	\$1,446,078
				Per Year	\$482,026
Fawn Predation Study					
Vaginal radiotelemetry Implants to determine time of parturition	120	\$263	\$31,560		
Extra field crew time	6	\$14	\$96,768		
Expandible VHF collars	120	\$250	\$30,000		
Refurbishing GPS collars for 2 years	240	\$100	\$48,000	Subtotal	\$206,328
Flight time included in above contract (may be an underestimate)	0	\$0	\$0	Per Year	\$68,776
Coyote Control for 3 DWA					
Coyote Control trappers @ 3 mo year	6	\$22	\$228,096		
6 Trucks for field crews w/ gas for 3 mo for 3 years	6	\$7,000	\$31,500		
Traps @ \$14 for 1.75	100	14	1400		
Snowmobiles	6	\$6,500	\$39,000		
Snowmobiles Maintenance and Gas @ \$500 /sled /yr and \$640 mo gas @\$32/day for 20 days/mo	6		\$43,560		
				Subtotal	\$343,556
				Per Year	\$114,519
				Study Total	\$1,995,962
				Per Year	\$665,321

Study Design 3

Measure harvest rates of deer in a WMD before and after coyote control methods were deployed in one or more DWAs.

ISSUES:

This study design was considered. However, in addition to the limitations described in the above study designs, it would have the added limitation of variable levels of hunting effort and a limited ability to investigate deer survival on paired study sites. The latter limitation would make it difficult to estimate the effects of winter severity on the study. This was not considered a tenable study design.

Appendix 8C

Feasibility of a Deer Predator Control Study Background Information

Deer Predation Working Group Meeting
December 18, 2008

Summary:

*** There are few tools to control coyotes, * the Department may need to apply for another Incidental Take Permit for ADC trapping in northern Maine, * a study would be expensive and impractical under current budget reductions, * there are significant logistical challenges and expenses for any method of coyote control, * trapping coyotes around deer yards does not address fawn predation by coyotes or black bear, * any large scale coyote control effort would have to be maintained through time.**

Tools:

- Only tools currently available are hunting with hounds, recreational trapping, shooting over bait or calling and shooting.
- Any major increase in trapping in the lynx range will likely result in lynx takings under the federal Endangered Species Act. A study would require intensive trapping around 4 to 6 DWAs from February through April in northern Maine, and a coyote control program would likely require an even more intensive trapping effort. Trapping lynx during this time of year in foothold traps may result in frozen digits and complications from frostbite. These "takings" may expose the Department to lawsuits. As a remedy, the Department should consider pursuing a federal Incidental Take Permit. These permits must be approved by the USFWS. All incidental take permits undergo advertisement in the Federal Register and a public comment period before the USFWS determines whether the permit is acceptable. An Incidental Take Permit (ITP) would take a minimum of a year and a half to write and be approved by the USFWS. Negative public opinion on issues concerning trapping, the likelihood of lynx incidental captures, and the possibility of injuries due to frostbite raise the question of whether the USFWS would grant a permit for the study or any larger coyote control effort.
- Should the USFWS granted an ITP for the study or a larger ADC effort, the logistics of tending a long trap line under a 24-hr tend become very difficult in late winter when deer are most vulnerable to coyote predation (i.e., March and April). This includes moving through the snow with snowmobiles, traveling to the DWAs, having traps melt out of the snow, and having snow freeze over traps.
- Currently, we are operating under a court order to use foothold traps $\leq 5 \frac{3}{8}$ " in size in much of northern Maine. The small size of these traps makes them difficult to use in snow conditions.
- Tools that would be available without a permit include hunting with hounds, shooting coyotes over bait, and shooting denning coyotes. It is unlikely that sufficient effort could be applied to reduce coyote predation on deer.

- Controlling coyotes by "denning" (i.e., killing the adult coyotes and then dispatching the pups in the den or leaving them to die) would eliminate the cold weather problems associated with the incidental capture of lynx. However, denning coyotes may have public relations implications for hunters and trappers.
- Denning has been used successfully out west to control domestic lamb predation where sheep use specific pastures and coyotes denning near these pastures can be targeted. However, denning coyotes in Maine would not target a specific concentration of deer. Its purpose would be to reduce local populations of coyotes during the spring which may not be an effective means of reducing deer predation losses.
- Denning coyotes does not address black bear or bobcat predation on deer fawns.

Effort:

- To study whether predation control works, it will be critical to measure effort for each predation control method that is chosen. Currently, coyotes are trapped and hunted in northern Maine and the rate of their removal is insufficient to impact the deer population. What we need to determine is what level of effort increases deer survival for each method.
- To determine the level of effort needed to control coyotes, we need to take into account that coyote control efforts will need to be maintained during a given year because the movement of nomadic coyotes (e.g., Mosnier et al. 2008 JWM 72:483-491) will bring new coyotes into an area where coyotes have been removed. This study (Mosnier et al. 2008) also indicates that long range dispersals of coyotes and bears make it necessary to maintain coyote control year after year to reduce predator numbers in an area. Although deer populations may recover to a point where they are less vulnerable to predation, periodic severe winters will set the deer population back, and deer predation control efforts will have to start again. Further complicating predation control efforts, coyotes learn to avoid traps. Human ADC efforts are thought to result in natural selection processes favoring the wariest coyotes. Sack's et al. (1999, JWM 63:939-949) point out that on intensively trapped areas, 10 times the effort is required to trap a coyote as compared to an area where coyotes are naive.
- Reports of more than 50 coyotes / year have been taken around Round Pond (10,000 acre deer wintering area) by one or more snarers (Arlen Lovewell, MDIFW, personal communication). To capture a similar number of coyotes using traps would, at best, require 2500 trap nights (@ 2 coyotes / 100 trap nights) and in excess of 100 days of labor (@ a minimum of 8 hr / day to tend a 25-trap, trap line and move the line periodically). Standard USDA cost for ADC work (includes personnel time, equipment and gas) is \$35/hr and likely would be more for this project (John Forbes, USDA, personal communication). At this rate it would cost \$28,000 to protect one deer yard. John was not able to do a detailed analysis of costs, my estimates indicate the costs would be closer to \$38,000 / yr to deploy two trappers for three months to protect one deer yard. If deer are protected in a deer wintering area, predation on fawns in spring may limit deer population growth.
- Depending on the size and configuration of a deer wintering area it could take more than 2 trappers to protect the DWA from coyotes. For example, DWAs similar to the

Millinocket Stream DWA (Fig. 1) may require 4 or more trappers to adequately protect it.

- If protecting deer in deer yards was successful, predation on deer fawns by black bear may negate any increase in recruitment.

Location:

- Downeast Maine would not be a tenable study site for the following reasons:
 - A. Deer harvest rates, and likely deer populations, have been increasing in WMD 19 and other Downeast WMDs since about 2003. If the study site was located in WMD 19, we could not use the recovery of the deer population as an end-point to determine whether coyote control was successful. We could only look at differences in the rate of increase for areas with and without coyote control.
 - B. Winter severity conditions in Downeast Maine are not comparable to Northern Maine. Because coyote predation rates on deer vary with winter severity, there would be no way to determine whether coyote control efforts that might be effective in Downeast Maine would be effective in Northern Maine. For example, if snow levels in a Downeast WMD are light, coyotes may continue to rely primarily on snowshoe hare and other foods during the winter rather than deer. Therefore, killing coyotes would have little impact on the deer population. Conversely, deep powdery snows may force coyotes to concentrate on deer. Killing coyotes in this circumstance may have a much greater impact on the deer population.
 - C. The logistics (e.g., housing, roads, fuel, and communication) for controlling coyotes around DWAs is better in Downeast Maine than in Northern Maine. If the purpose of the study is to determine whether deer predation control is feasible, it needs to be tested in regions with similar logistical challenges.
 - D. Snaring is being practiced in WMD 19; it would be difficult to separate the benefits of snaring from other methods of coyote control.
- It will be difficult to pair DWA characteristics to do a comparative study between areas receiving predation control and areas not receiving predation control. Consideration should be given to pairing DWAs based on: their size, the winter severity they experience, the number of deer using the DWA, spatial arrangement of cover, and the quality of cover. Less than ideal pairing is usually controlled by replicates (having more than one pair of study areas). This underscores the importance of having replicate sites in the study design (see below for further explanation).

Study Design Considerations

Need:

Accurately estimate predation rates on local congregations of deer where coyote control methods are employed and not employed.

Approaches:

- A. Radiocollar adult does and fawns to estimate survival rates, effects on recruitment (i.e., the number of fawns surviving to breed), predators responsible for mortalities, and timing of predation.

Study Design Considerations:

- It would be necessary to monitor deer on sites with and without predator control at the same time to account for changes in the vulnerability of deer to coyote predation due to winter severity. In other words, changes in deer survival would be calculated as the difference in the survival rate of deer on paired sites that have and do not have predation control.
- It would be difficult to find deer wintering areas that were similar enough to each other to conduct a paired study. This would lower our ability to detect a difference between sites receiving and not receiving predation control. In addition, areas would have to be far enough apart to ensure deer are not interchangeably using the paired DWAs from one year to the next.
- Replication of study sites would be required for valid results. It is standard practice to use more than one site when conducting experiments in a field situation where not all environmental elements can be controlled. Replication (usually at least 3 sites or groups of sites) is used to spot unknown factors in the environment that may confound study results. For example, if we only used one pair of DWAs we could have an unknown factor such as distemper at one of the DWAs that would confound any conclusion as to the effectiveness of coyote control. By including additional sites (replicates) we can identify any sites that are outliers and remove them from the data set. There may also be a high amount of natural variability among study sites. By adding additional sites we can better estimate what the average result is for the factors (coyote control vs. no coyote control) that we want to test.
- The study would have to be conducted for several years to determine the range of results under different levels of winter severity.
- This study design could be used to determine predation rates by various predators and how these rates vary throughout the year.
- This approach would be expensive in terms of personnel time and costs.

- B. Determine the number of deer in a deer wintering area before and after coyote control.

Study Design Considerations:

- This study design would not use radiotelemetry; hence, considerable cost savings could be realized (radiocollars, aerial monitoring, capture costs, personnel).

- Changes in predation rates could only be indirectly inferred from changes in deer densities from year-to-year. Deer densities could be measured or estimated at the beginning of deer-yarding period and end of the yarding period in a given year. A paired study design (i.e., measuring similar areas with and without coyote control during the same year) would still be preferred in order to control for winter severity.
- Monitoring deer densities could be done indirectly using pellet counts and dead deer surveys, or directly using aerial surveys (double-count technique as employed in New Brunswick, Canada).

The inaccuracies of deer pellet counts are well documented in the literature. Pellet counts could only be done in spring; thus variability in survival in the deer yard due to winter severity would make it difficult to estimate early season deer densities. Dead deer surveys could be done in the spring to get an estimate of deer mortality in the DWA over the winter. However, these surveys would only provide a rough estimate.

Alternatively, double-count aerial surveys could be done early and late winter to measure starting deer densities and final deer densities (to measure survival rates during the winter). Aerial surveys would require a helicopter (@ ~\$630 / hr and 3 paid observers).

- We considered collecting aerial deer densities in the fall over 1 or 2 WMDs after deer predation control in several deer yards within those WMDs. This would allow us to estimate the effect of winter coyote control on a DWA and regional basis. It would cost approximately \$32,000 / year for collecting deer density information from 6 DWA and 1 to 2 WMDs. This approach assumes that any change in deer densities would be related to changes in coyote predation levels. Changes in deer densities at the DWA or WMD level that occurred because of landscape changes (e.g., DWAs cut, forest fragmentation, short stopping because of logging operations, winter feeding) would confound any interpretation of the effects of predator control on deer densities. Finally, we would not be able to distinguish animals that died from coyote predation from animals that died from other causes (starvation, poaching, other predators, disease).
- This study design would assume that post-winter survival is the same among deer from different deer-yards. This is an important point since we do not know where yarded deer disperse to during the rest of the year. Summer/fall areas could be very different in their predation rates and in the quality of forage they provide.

C. Measure harvest rates of deer in a WMD before and after coyote control methods.

Study Design Considerations:

- This study design was considered. However, in addition to the limitations described in the above study designs, it would have the added limitation of variable levels of hunting effort and a limited ability to investigate deer survival on paired study sites. The latter limitation would make it difficult to estimate the

effects of winter severity on the study. This was not considered a tenable study design.

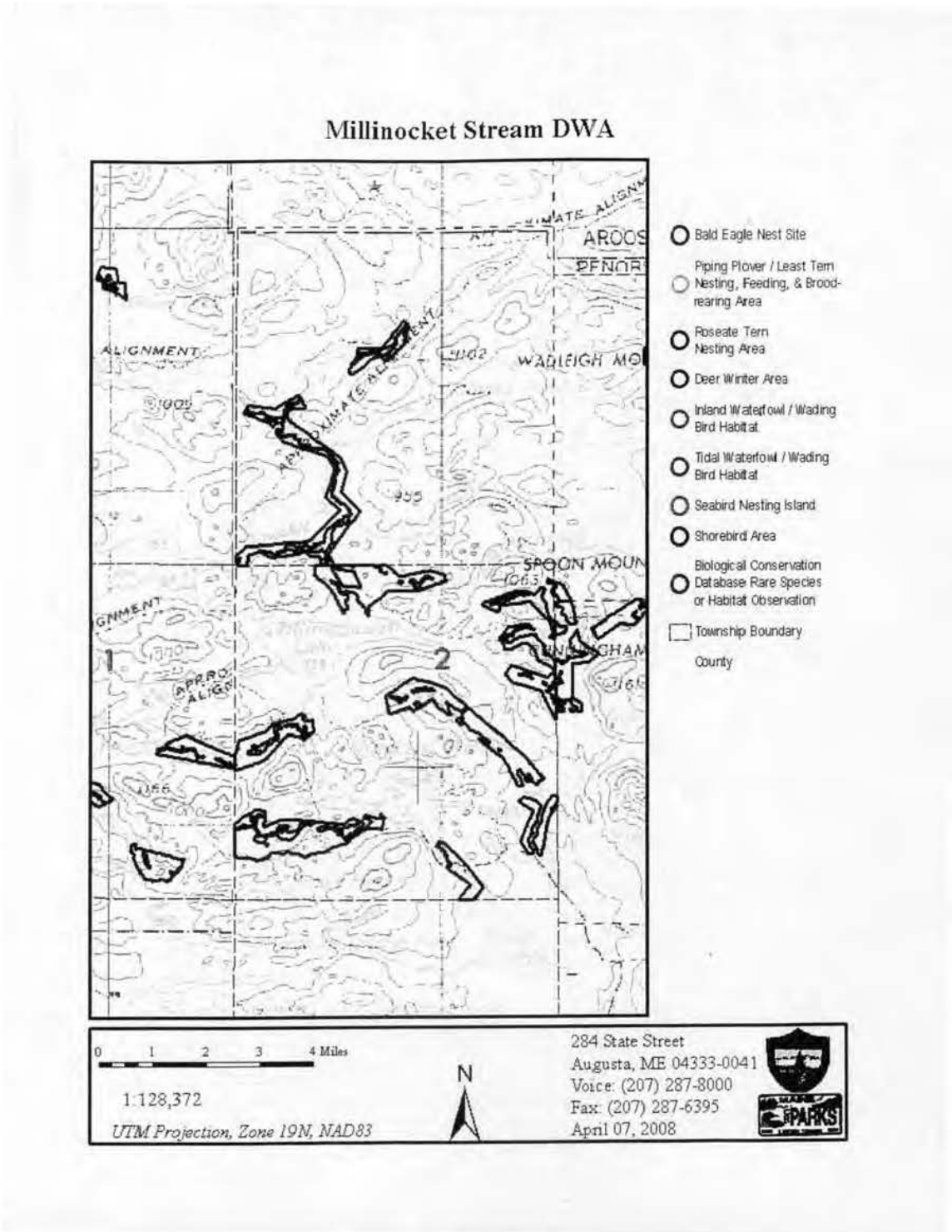


Figure 1. Configuration of Millinocket Stream Deer Wintering Area in Maine.

Appendix 8D

Possible Options for Addressing LD 2288, Resolve To Create a Deer Predation Working Group

Deer Predation Working Group Meeting
December 18, 2008

The following are several possible options that have arisen from our four Deer Predation Working Group Meetings to address the duties in LD 2288, "Resolve, To Create a Deer Predation Working Group". They are summarized here for discussion at our December 18, 2008 Working Group Meeting.

Coyotes

The following 4 options to address coyote predation of deer are presented below:

Option 1

Deer Predator Control Study – A Deer Predator Control Study 1) would be expensive and impractical under current budget restrictions, and 2) we could not control enough variables to provide definitive cause and effect results. As such, the outcomes of a study would always be questioned.

Option 2

An ADC program that would require an Incidental Take Permit in lynx areas - MDIFW will not pursue use of foothold traps or snares for ADC efforts to control coyotes because they are not appropriate devices for a winter coyote control program in areas with lynx.

- Direct MDIFW to develop an ITP for an Animal Damage control Program that would use cable restraints (non-lethal). There is a body of research, literature, and experience suggesting that cable restraints are the most appropriate tool to use in areas with lynx. Issues to consider:
 - It would take a minimum of a year and a half to write an ITP and undergo review/approval by the USFWS.
 - MDIFW would not pursue developing an ITP for an ADC program until we receive resolution from the USFWS on the pending ITP for the trapping program.
 - Costly – to prepare (get estimate from Wally) and to implement if ITP is approved (estimated at \$38,000 for two trappers to protect one deer yard for three months (see Wally's *Feasibility of a Deer Predator Control Study*).

Option 3

An ADC program that would not require an Incidental Take Permit in areas with lynx.

Available Tools:

- Hunting with hounds – issues to consider
 - Limited number of people available to hunt with dogs.
 - Logistical challenges.
 - Disturbance to deer in wintering areas.
 - Any large scale coyote control effort would have to be maintained through time.
 - Unlikely that sufficient effort could be applied to reduce coyote predation on deer.
 - Costly (estimated at \$38,000 for two trappers to protect one deer yard for three months (see Wally's *Feasibility of a Deer Predator Control Study*)).
- Shooting coyotes over bait – issues to consider:
 - Logistical challenges (i.e., moving bait stations, etc.).
 - Disturbance to deer in wintering areas.
 - Any large scale coyote control effort would have to be maintained through time.
 - Unlikely that sufficient effort could be applied to reduce coyote predation on deer.
 - Costly (estimated at \$38,000 for two trappers to protect one deer yard for three months (see Wally's *Feasibility of a Deer Predator Control Study*)).
- Controlling coyotes by “denning” (i.e., killing the adult coyotes and then dispatching the pups in the den or leaving them to die).
 - May have public relations implications for hunters and trappers.
 - Would not target specific concentrations of deer. Its purpose would be to reduce local populations of coyotes during the spring and may not be an effective means of reducing deer predation losses.
 - Unlikely that sufficient effort could be applied to reduce coyote predation on deer.
 - Denning coyotes does not address black bear or bobcat predation on deer fawns.

Where ADC Activity Would Occur: Hunting coyotes with dogs and shooting coyotes over bait would occur in the following areas:

- Actively used DWAs within Wildlife Management Districts where the deer population is below population objectives, and
- DWAs where landowners are managing deer wintering habitat using DWA Best Management Practices (BMPs).

Animal Damage Control Agents: Qualified persons must hold a valid trapping license and be proficient in the use of methods relevant to their activity. Once the district warden and regional wildlife biologist are satisfied with a person's competency and understanding of the program, that person can register as an ADC agent for the activities in which he/she is proficient. Additional activities can be added upon approval of MDIFW's Wildlife Management Section Supervisor.

ADC licenses must be renewed every two-years, during which time an agent must attend one regional training session and submit monthly ADC activity reports. Registered ADC agents are considered "Agents of the Commissioner" and perform ADC work under the direction of a Department official.

Deployment: Deployment is an explicit action by the Department, through the Regional Wildlife Biologist, that authorizes an ADC agent to operate in a given area to perform coyote control duties in areas where predation by coyotes is posing a threat to deer or other wildlife.

Regional staff will provide the necessary support to agents (logistical support such as deployment, identification of lynx areas, etc.), participate in training programs, and carry out deployment and certification procedures according to Department policy

The Regional Wildlife Biologist will maintain a regional map depicting the location of all coyote control activity within his/her region.

Accountability: ADC agents are responsible for adhering to the provisions of the Department's ADC policy.

Reporting: All coyotes must be reported at least monthly on Department ADC reporting forms. Monthly reports must be received at the appropriate regional wildlife headquarters as follows: coyote control activities for the month of December must be reported to the Department by 10 January; for January by 10 February; for February by 10 March; and for March by 10 April. An ADC agent will lose his/her certification for failure to submit complete and accurate reports as scheduled.

Option 4

Take No Action at This Time, Because:

- There are few adequate tools to control coyotes;
- The Department would need to apply for another Incidental Take Permit for ADC trapping in northern Maine;
- A study or any type of directed coyote control would be expensive and impractical under current budget restrictions;
- There are significant logistical challenges and expenses for any method of coyote control;

- Controlling coyotes around DWAs does not address fawn predation by coyotes or black bear; and
- Any large scale coyote control effort would have to be maintained through time.

No Action would be taken until such time that the above issues can be addressed and resolved satisfactorily.

Bears

There has been relatively little discussion about bears compared to coyotes; yet there seemed to be general agreement on Option 1 though Options 2 and 3 were discussed but not resolved.

Option 1

Take No Action, Because:

- Bears are extremely important to Maine's economy and to achieve a desired response in the deer population would require a significant increase in the bear harvest and a greatly reduced bear population, which may undermine the economic importance that bears provide to Maine's rural economy.
- Increasing the bear harvest by expanding current seasons, adding new seasons, and/or increasing bag limits may not be socially acceptable and could threaten our current bear seasons.
- Determining the effectiveness of bear population control would require the same level of study as for coyotes. Such a study 1) would be expensive and impractical under current budget restrictions, and 2) we could not control enough variables to provide definitive cause and effect results. As such, the outcomes of a study would always be questioned.

Option 2

Retain Current Bear Season Structure and Bag Limits but Increase Participation

- Lower fees and/or waive permits to increase participation.
- Increase participation by eliminating the guide requirement for aliens.
- Increase marketing of bear hunting in Maine by MDIFW, Department of Tourism, others.

Option 3

Increase the Bear Harvest by Expanding Current Seasons, Adding New Seasons, and/or Increasing Bag Limits – Issues to consider:

- What, where, when, how?

- May not be socially acceptable and could threaten current seasons.
- Determining the effectiveness of bear population control would require the same level of study as for coyotes. Such a study 1) would be expensive and impractical under current budget restrictions, and 2) we could not control enough variables to provide definitive cause and effect results. As such, the outcomes of a study would always be questioned.