

**REPORT OF THE
DEPARTMENT OF INLAND FISHERIES AND WILDLIFE**

BEFORE THE JOINT STANDING COMMITTEE ON INLAND FISHERIES & WILDLIFE

L.D. 1569 Sec. 3

**AN ACT TO RESTORE THE WHITE-TAILED DEER POPULATION AND IMPROVE
MAINE'S WILDLIFE ECONOMY AND HERITAGE; DEER POPULATION GOALS AND
5-YEAR BENCHMARK REPORT**

SPONSORED BY: PRESIDENT RAYE OF WASHINGTON

**COSPONSORED BY: REPRESENTATIVE CRAFTS OF LISBON
REPRESENTATIVE DAVIS OF SANGERVILLE
REPRESENTATIVE ESPLING OF NEW GLOUCESTER
SENATOR MARTIN OF KENNEBEC
REPRESENTATIVE SHAW OF STANDISH
SENATOR TRAHAN OF LINCOLN**

JANUARY 25, 2012

White-tailed deer are a public resource, but their habitat is privately owned. The Maine Department of Inland Fisheries and Wildlife (IFW) manages Maine's deer population to ensure a healthy, secure population for both viewing and hunting, but at a balance that is mindful of other biological, social, and economic considerations. Management of deer habitat depends on a partnership between the Department and private landowners.

The public sets management direction. In 1999 the Big Game Public Working Group, comprised of stakeholders having diverse interests in deer, considered deer management issues for several months and recommended deer management goals and objectives that covered the entire state for the period 2000-2015.

Controlling the direction and magnitude of deer population change requires regulating doe losses. Preferably, doe losses are controlled using a method that offers flexibility to account for annual and spatial changes in deer population dynamics, including non-hunting mortality. Hunting mortality is often additive to other deer losses in Maine and hence, manipulation of the doe harvest can influence all-cause mortality rates.

Currently our deer management system outlines how the department assesses reaching deer population objectives by Wildlife Management District (WMD); this can be reviewed at: <http://www.maine.gov/ifw/wildlife/species/plans/mammals/whitetaileddeer/managementsystem2007.pdf>. *It is important to note that IFW summarizes, analyzes and reviews data collected on deer every year to understand where the population for each WMD is related to the population objective.* IFW does not have the resources nor are there techniques available to count all deer in

all areas annually. Currently we are testing the applicability of the double-count aerial helicopter survey to count deer in some south and central WMDs. If this technique is feasible, it may allow us to get annual estimates on 1 to 6 WMDs per year if funding is available and weather permits (early December snowfall/low wind speeds).

As with all state agencies that manage deer, IFW uses various indices and measures to provide information on the population trajectory of each WMD. This includes harvest data, hunter surveys, wintering conditions and broad scale information on road collisions and nuisance complaints. Pages 29-45 (Management Decision Process) provide an in-depth description of how we use data to inform our management decision making (Any Deer Permit allocations) for a portion of our WMDs. By permitting zero Any-Deer permits in a given WMD for many years, IFW has done all that can be done in terms of harvest management to increase the deer population in that WMD by minimizing the influence of hunting on doe mortality.

Maine's Game Plan for Deer discusses in great detail the many challenges associated with increasing the deer population in northern, eastern and western Maine (NEWME). A suitable measure of progress might be through successfully addressing some of those challenges. Illegal hunting, deer/vehicle collisions and supplemental feeding are significant annual mortality factors. These are human induced and must be addressed along with other factors. IFW will continue its efforts to inform and educate the public on how they can help manage mortality factors for deer that are unrelated to hunting.

IFW is resource limited. Society has not been willing to strengthen regulations that protect DWAs in organized and unorganized towns which has contributed to loss of winter habitat. We have not been able to secure adequate funding for predation management, for acquisition of important DWAs, and funding for needed research and data collection to answer specific questions that we hear.

1. Update on 5-year benchmarks

Rebuilding Maine's deer herd will be challenging; the deer decline has been developing gradually over many years; it will take decades to improve. The Department has identified 5 elements that are necessary to rebuild the northern, eastern and western deer herd:

1. Deer Wintering Areas and Winter Severity,
2. Deer Population Management,
3. Predation,
4. Deer Planning and Public Involvement, and
5. Information and Outreach.

Maine's Game Plan for Deer describes each element in greater detail and identifies specific strategies, including additional funding, staffing, and operational needs to accomplish objectives. Whether we succeed in increasing the NEWME deer population will depend on the collaborative efforts and resources of many – the Department, legislature, sportsmen's groups, landowners, and interested citizens. With this challenge comes a great opportunity to expand and forge new partnerships and collectively work to restore deer for future generations of outdoor enthusiasts.

Each **element** is critical, and there is **no single strategy** that will increase deer numbers. Achieving an increase will require successful implementation of the strategies that span each of the five elements above. The following benchmarks are those which can be reasonably measured and used to gauge overall success:

- Continue efforts to identify active DWAs and obtain assurances from cooperating landowners that 100% of the acreage currently supporting wintering deer in northern, eastern, and western Maine is being cooperatively managed with the Department by implementing the Guidelines for Wildlife: Managing Deer Wintering Areas in Northern, Western, and Eastern Maine or by developing cooperative management agreements or other methods **by December 31, 2013**.
- Continue collaborative efforts with DOT to develop and install signage at high deer collision areas **by December 31, 2012**.
- **By December 31, 2015** update the Department's Deer Management Plan. MDIF&W has used public involvement to set management goals and objectives for deer since the early 1970s; Maine's current deer management plan is scheduled for an update in 2015 and will entail revising the Deer Assessment, convening a public working group to develop goals and objectives for the period 2016-2031, and updating the Deer Management System.
- Update the Department's Plan to Increase the Deer Population in Northern, Eastern, and Western Maine no later than two months after the Deer Management Plan is revised.
- Update bear population estimate **by July 2012**.
- Stabilize the bear population at no less than 1999 levels, through annual hunting and trapping harvests **by July 2017**.
- Secure funding **by July 1, 2012** to continue IFW's effort to manage predation in priority DWAs utilizing trapping of coyotes, shooting coyotes over bait and hunting coyotes with dogs.

2. Annual goals for wildlife management districts, funding needed to meet the goals and the progress toward meeting the goals

The Department has used the HARPOP model [Lavigne 1989] to estimate statewide deer populations from 1957 to the present. This model requires multiple inputs including the registered deer harvest, harvest population age structure [derived from the 4,000 to 5,000 deer, that biologists examine during the hunting season], as well as information on hunter effort, illegal kill, crippling loss, and reproductive data. The Department continually looks to refine inputs to the deer population model.

Since 1983, the Department has used any-deer permits to regulate the doe harvest in Maine; in many years with limited or no hunting allowed for antlerless deer in northern, eastern, and western Maine. In 2009 the Department's Fish and Wildlife Advisory Council approved a rule in which any wildlife management district designated bucks-only during the regular firearms deer season would also be bucks-only for all deer hunting seasons, including archery and youth. The Northern and Eastern Deer task Force recommended this rule.

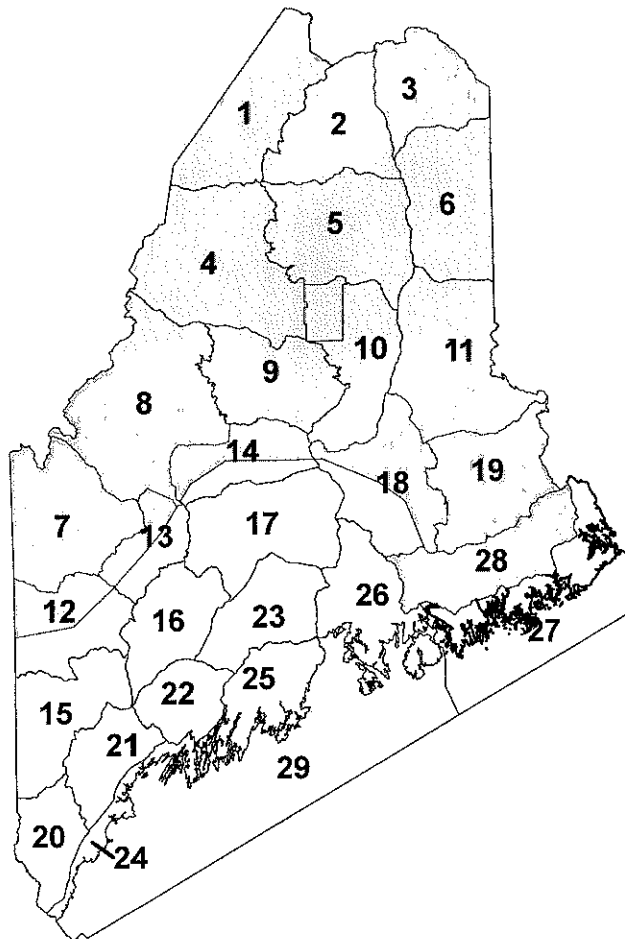
Conservative doe harvests have likely slowed deer population decline in northern Maine, but have been insufficient to reverse the decline. In areas that have had no any-deer permits for

many years and the deer herd has not increased, further adjustments to regulated hunting cannot be expected to increase deer numbers, as factors other than hunting continue to depress the deer population.

The following table demonstrates that we are at or near our objectives for south and central Maine. However, in northern, eastern and western Maine our objective is to see an increase in deer numbers over the long term.

Table 1. Short- and long-term deer density objectives (no. deer/mi²) versus best current estimates by group of WMDs.

<u>WMD</u>	<u>OBJECTIVES</u>		<u>Current Density Post Hunt Estimate</u>
	<u>Short</u>	<u>Long</u>	
1-11	2-8	10	2-6
12-14,18	7-14	15	4-9
19, 27, 28	3-11	15	3-8
16, 17, 22, 23, 26	18-22	20	10-17
15, 20, 21, 24, 25	14-16	15	14-18



WMD 5		Deer Hab-Mi ²							
		1496							
POPULATION ATTRIBUTES									
ACAM	Bucks	35	Does	26	Allowable	24			
Pre-Hunt Sex Ratio	Current	121	When Stabilized	146	WMR	2			
Deer Mgt. History									
		2003	2004	2005	2006	2007	2008	2009	2010
Yabd (15.5-16.5)		17.8	17.4	16.2	18.3	15.9	18.9	21.2	18.6
BKI		18	21	15	16	15	9	5	7
WSI #		99	78	77	51	68	108	98	53
WSI Rating		AA	BA	BA	BA	BA	AA	AA	BA
Harpop (Post Hunt/mi ²)		4.2	4.4	3.6	3.5	3.4 (5.7)	1.7 (3.8)	NA	NA
Mgt Strategy		D	B,2,7	B,7	B,3	A	D,1	D,1	A,2
Stabtar (stabcur)		20(20)	20(15)	20(20)	20(20)	20(20)	20(20)	20(15)	20(15)
To Stabilize:	Doe Harvest	42	48	47	48	46	26	12	15
	Permits	223	226	320	216	0	0	0	0
Harvest Prescription:	Desired	0	10	15	25	0	0	0	0
	Achieved	6	16	16	23	4	1	0	0
Adult Buck Harvest:	Projected	250	350	340	300	200	195	90	80
	Achieved	281	323	235	238	230	129	77	102
Adult Doe Harvest:	Quota	0	35	51	75	0	0	0	0
	Achieved	16	53	37	55	10	1	0	1
Expansion Factor:	Applied	na	5.0	5.0	6.0	0	0	0	0
	Achieved	na	4.7	6.8	4.5	0	0	0	0
Permits Issued:	Per 100 mi ²	0	16	16	16	0	0	0	0
	Number	0	250	250	250	0	0	0	0
2011 Any-Deer Permit Recommendations									
Pop. Objective (Deer/mi ²)	Short-term	6.8		Long-term	10		Mgt. Strategy		
Applied Doe Removal Rate (Look up Table) and Associated HSR									
Stabilization Ratio				Ach. Doe	Prev. WSI	Curr WSI	Adj.	Cumulat.	Final Harv.
No Change		Adjust for Skewed Sex Ratio		% DRR	DRR	DRR	for Strat.	DRR	Prescrip.
20		Stabcur-15		3	0	3	2	-8	0
Projected Buck Harvest									
Adult Doe Quota									
Expansion Factor									
# of ADP Recommended		Permits per 100 sq. mi.							

Population Management and Assessments

Aerial Helicopter Surveys-Double Count

In July 2010 IFW was able to modify an OHF grant for deer so that the funds could be used to test the applicability of a helicopter aerial survey to estimate deer abundance in select south-central WMDs where Any-Deer permits can be adjusted annually. We received \$28,000 through OHF which were matched with additional \$84,000 from the Federal Pittman-Robertson Fund. This level of funding has carried into the 2011-2012 winter framework for conducting these surveys. In 2010-2011 we flew WMDs 17, 22, 25, and 26 until the point in time where deer moved to winter cover and flying conditions precluded additional flights. These surveys require snow cover, so the window of opportunity can be brief. So far in 2011-2012 we have flown WMDs 16 and 22. When sightability rates are acceptable these surveys provide us with a point-in-time estimate of deer numbers in that particular WMD. We are continuing to work on relating aerial survey information to other data sources to provide an annual index to deer abundance.

Funding: IFW should request annual funding to conduct additional surveys to allow for a continual rotation of WMDs over time to ensure flight coverage of all applicable WMDs. Not all WMDs can be flown due to expected deer densities, terrain, and applicability of this survey technique. However if funding was available we would conduct 3-6 surveys each year to estimate WMD-specific deer densities. Costs per flight would approximate \$4,000-\$4,500.

Hunter Effort Survey

To gain an understanding of deer population trajectory we must have an understanding of annual hunter effort. The number of hunters and how much time they spent afield each fall is critical to understanding the annual variation in effort by hunters to harvest deer. In 2011 we used additional funding from the legislature to implement a diary type hunter effort survey which included a 2nd complete follow-up survey in case surveys were lost or misplaced. Follow-up surveys increase participant response and bolster sample size to provide more reliable data. Sighting rates of deer by hunters may also provide a useful index of relative abundance among WMDs.

Funding: IFW should request annual funding for hunter effort surveys. Material costs add up quickly due to large sample sizes that are required. Annually ~\$10,000 dollars should be dedicated to hunter effort surveys.

Anticipate Needs and Estimated Costs	
Needs	Estimated Cost
Element 1: Deer Wintering Areas and Winter Severity	
Additional flight time for DWA surveys	\$15,000 annually
Additional costs associated with aircraft: fuel, maintenance, operational costs	\$45,000 annually [~430 hours at \$105/hour]
2 additional Biologist I positions to work with private landowners on deer habitat initiatives, landscape planning, grant opportunities, and analysis of habitat models, and assist regions with DWA surveys.	\$140,000 annually [Fully Burdened]
Element 2: Deer Population Management	
Additional Biologist I position within MDIF&W's Mammal Group with abilities to statistically analyze large data sets and harvest information, model wildlife populations, and provide expertise in survey design and analysis.	\$70,000 annually [Fully Burdened]
Survey and research needs to refine inputs to HARPOP and to recalibrate the deer population model [estimates of deer abundance, productivity and recruitment assessments, deer mortality assessments, role of predation in suppressing deer numbers, etc.].	\$125,000 annually
Increased costs for the Deer Hunter Effort Survey if we were to use phone surveys to increase hunter response.	\$10,000 annually
Element 3: Predation	
Funds to implement an Animal Damage Control Program that utilizes shooting coyotes over bait and hunting coyotes with dogs.	\$100,000 annually
Funds to prepare an Incidental Take Permit application for use of cable restraints in lynx areas IF we are successful in obtaining an ITP for Maine's trapping program.	\$15,000
Element 4: Deer Planning and Public Involvement	
Contractual services for modeling associated with the Super Species Planning effort.	\$70,000 [\$35,000 each year for 2 years]
Element 5: Information and Outreach	
1 additional position within the Bureau of Resource Management to provide information and outreach efforts pertinent to deer as well as other Bureau issues.	\$70,000 annually [Fully Burdened]
Purchase of air time for public service announcements.	Varies annually [~ \$35,000 / seasonal PSA]
Advertising costs in state, regional, and national print media	Minimum \$1,000 per full page ad

3. Data on deer mortality, including, but not limited to, predation on deer

Illegal deer kill is a long-standing drain on the deer population. Deer losses to illegal hunting are additive to most other losses, i.e. the magnitude of the illegal deer kill directly reduces the allowable harvest to law-abiding hunters. Though poorly quantified, the unreported illegal kill of deer may approximate 10,000 to 15,000 deer, or 1/2 the legal harvest of deer in Maine [Lavigne 1995; Vilkitis 1971 as cited in Lavigne 1997]. Locally, illegal kill may contribute to deer population declines, or it may impede population recovery. Sources of illegal kill include night hunting, out of season hunting, failure to register deer killed in season, and false registration of deer killed by another hunter. Some of these illegal kills are reported in the registered harvest. The illegal kill estimate presented above includes only those which remain unreported.

Deer killed in collisions with motor vehicles also represent an additive loss to Maine's deer population, and hence they reduce allowable harvest. The number of road-kills varies seasonally (peaks in June and November), regionally, and annually. Winter feeding can draw deer near roads where they are susceptible to vehicle collisions. Maine Department of Transportation reports annual deer mortalities from collisions with motor vehicles have fluctuated between 2,500 and nearly 4,000 deer statewide during the past 10 years. Many deer mortalities to motor vehicle collisions are never reported. Hence, the figures for deer losses to motor vehicles cited above under-estimate the true magnitude of these losses to the deer population.

During early summer, coyotes join a long list of predators which compete for newborn fawns: black bears, red fox, bobcats, fisher, and domestic dogs. Throughout North America, bear is an important predator of deer fawns. The degree of predation varies across the landscape with bears accounting for 20% - 60% of fawn mortality.

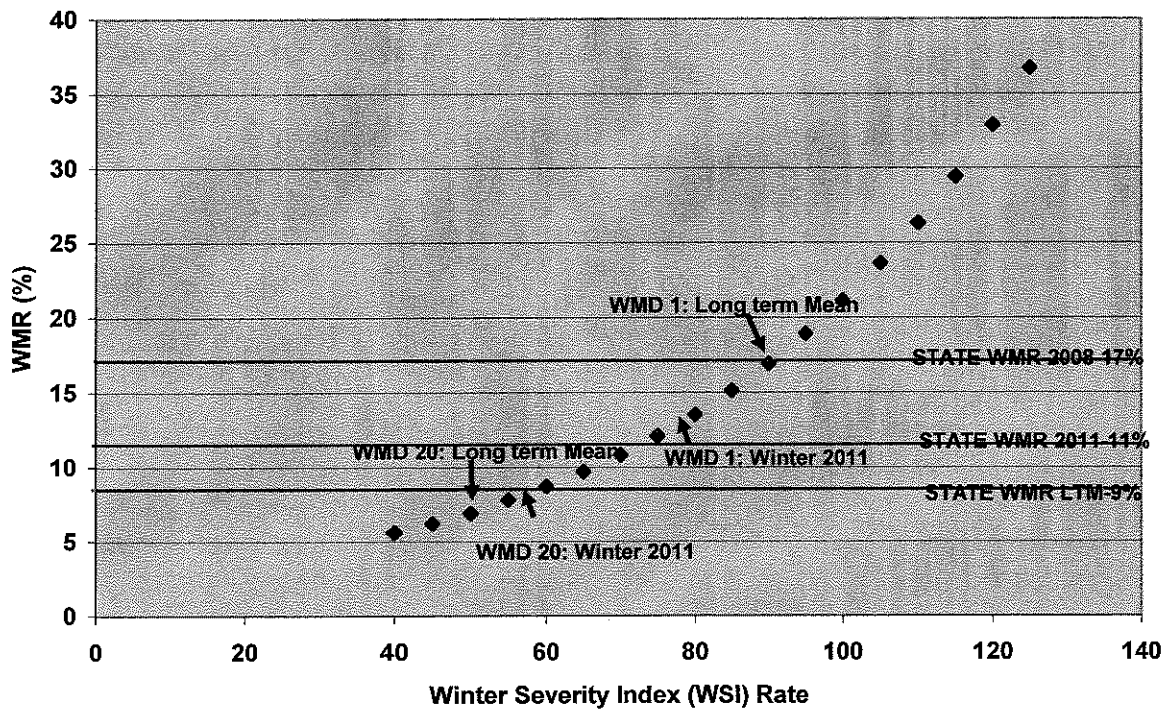
IFW annually monitors winter severity across the state of Maine at 26 Winter Severity Index (WSI) stations. For 20 weeks from December through April we monitor snow depths, deer sinking depths, and ambient temperatures. The combination of these attributes provides us with an annual calculation of how severe the winter is. In 2010 we received funding through the Outdoor Heritage Fund (OHF) for ~\$900 to purchase new temperature data-loggers for these 26 stations. With match from the Federal Pittman-Robertson fund we were able to purchase these loggers and deploy to each station. As of December 13th, 2011 we have deployed these stations.

At the end of April these WSI stations are closed-up and the information is used to calculate annual winter mortality rates (WMR). These rates give us an estimate of overwinter deer losses by Wildlife Management District (WMD). Based on historical data we use a 15-year average threshold value or long-term mean (LTM) to evaluate annual winter mortality. If winters are severe, annual mortality will increase to a level above the 15-year threshold, and vice versa, if winters are mild, annual winter mortality decreases. Based in part on winter mortality in WMDs where we currently allocate Any-Deer permits, permits will either be increased or decreased based on previous population status and overwintering conditions.

For the winter of 2010-2011, WMRs were calculated for all Wildlife Management Districts excluding WMD 29 (the islands southwest of MDI). How WMRs are used is described in more detail in Appendix 1.

The figure below demonstrates that with increased winter severity, winter mortality increases. At the extremes of the state, WMD 1 to the west of Allagash and WMD 20 surrounding Sanford show a large difference in the percent of annual winter mortality according to their respective long-term means (LTM). In the past winter of 2010-2011 WMD 20 had a winter mortality rate of ~8%, whereas in over the long term mean the winter mortality rate is typically ~7%. On the other end of the scale WMD 1 last winter had close to 13% winter mortality rate compared to its 15 year average of ~17%. Also note that in the terrible winter of 2008 the winter mortality rate across Maine was 17% whereas in a “normal” winter it is closer to 9%. A difference of 10% in winter mortality, such as 7% versus 17%, may not seem like a large difference, but biologically speaking, it can be enough difference in mortality rate of adult females to suppress population growth and even induce long-term decline if severe winters are two or more within a few years of each other. The trend of increased winter mortality as winter severity increases captures mortality by both starvation and predation. More detailed tables of winter severity and estimated mortality rates by year and WMD are available.

Relationship of winter mortality rates (WMR) to winter severity (WSI) in Maine.



4. An assessment of the efforts of animal depredation control agents

During the spring of 2011 MDIFW allocated funds for late winter / early spring coyote control. Funds were to be used 1] to deploy hunters to DWAs experiencing coyote predation and/or 2]

to monitor active DWAs then directing hunters to active DWA predation sites [monitoring is considered a second priority to deploying hunters].

There were two factors limiting the success of the spring effort: 1] after announcing the effort there was short lead-time to identify and deploy hunters, and 2] because the effort was reactive, coyotes were removed after predation had occurred. Below are the results:

- 118 hours hunting/calling
- 29 hours monitoring
- 1,151 miles driven
- 11 coyotes killed
- Expense of \$1,608.97

Section 10 of LD 1569 directed MDIFW to organize an advisory group of professional guides and trappers to help develop and implement a program for managing predation on deer. This advisory group's efforts and recommendations were presented in detail on January 9, 2012.

Immediately following the release of the advisory group's recommendations in October of 2011 the Department began implementation. In summary, high-value DWAs and surrounding summer-autumn range were identified by regional wildlife biologists to receive both proactive and reactive predator and predation management by ADC agents. The objective is to annually reduce coyote density in these areas between early-autumn and early-winter. Then monitor coyote presence and manage predation events as needed through winter.

With limited funding the Department then chose a subset of 10 DWAs where we could sustain a continued effort through the winter. Conditions this winter have been great for deer but very poor for hunting coyotes. With little to no snow cover much of the winter, food availability for coyotes remains high and deer are not heavily concentrated resulting in low coyote response to calling and bait piles. Acknowledging that predation events are minimal and current effort is inefficient we have reduced effort until conditions improve. Hunters are ready and conditions are improving.

Additionally, two yards are assigned to a houndsmen but had been delayed pending some snow cover. For another deer yard the hunter requires access via snowmobile. With recent snowfall hunting efforts will now begin in these three DWAs.

To date, 34 coyotes have been harvested at a cost of about \$5,000 with an additional 24 coyotes taken in these yards through volunteer efforts.

5. The number of flights made annually by agents of the department to assess the deer population

Currently, the Department employs two aerial survey techniques for assessing deer. First, MDIFW has long recognized the importance of deer wintering habitat (DWA) to deer survival in Maine and, depending on aircraft availability and favorable conditions, regards winter DWA aerial and ground surveys as a high priority of Wildlife Division biologists. Biologists and game wardens have been documenting the location of deer wintering areas since the 1950's. In *Maine's Game Plan for Deer* the Department indicated it would intensify its efforts and

resources to document areas of active winter deer use, and staff responded in a number of ways producing excellent results.

A number of variables impact the amount of aerial surveys staff can complete in any given winter including: funding, aircraft availability, staff availability, snow depth, time since last snowfall, light conditions, wind, equipment failure, shutdown days, etc. During the 2010/2011 winter, Warden Service pilots made flying DWA surveys a priority and also coordinated survey efforts with Department of Conservation pilots. The Department of Marine Resources was on board to help as well but their airplane was down for repairs most of the winter and was unavailable. Next, staff worked to prioritize flight schedules based on the time lapse since an area was last flown and the willingness of landowners to cooperatively manage DWAs. Now we just needed the right weather conditions to take to the air.

It is difficult to identify an “average” winter for flying; however, if you look at our efforts over the last decade or so you would find that on average we fly about 47 towns per year surveying DWAs. As a result of a coordinated effort among many and some favorable conditions, we achieved a combined 24.5 “flight days” allowing us to survey DWAs in 90 towns - a 91% increase over an “average” winter! This represents a significant effort and will be very useful as we continue reaching out to landowners and develop additional cooperative DWA management efforts.

Snow conditions during the beginning of the 2011/2012 winter have been very favorable for deer however, with the lack of restrictive winter conditions for deer flying has not begun. Once conditions allow aerial surveys will commence.

6. The department’s efforts to work with interest groups regarding predator control

Regional wildlife staff have worked with sportsmen, foresters and district wardens to monitor predation events in DWAs and respond as predation incidences are reported including developing correspondence, contracts, report forms, and maps for hunters deployed to predation sites.

During the winters of 2009/2010 and 2010/2011 MDIFW monitored DWAs for and responded to predation events using the following protocol:

- 1] Communicate with your outdoor partners and warden staff to learn of any DWAs receiving coyote predation,
- 2] attempt to identify willing hunters and direct their efforts to these areas,
- 3] collect or coordinate collection of roadkill and provide bait to hunters working around DWAs,
- 3] provide access to Department facilities for hunting around DWAs,
- 4] work with the forest landowners to see if they might allow access to their facilities, and
- 5] if willing hunters could not be found then refer these areas to sportsmen organizations as a second attempt to direct hunting effort to these DWAs.

In most cases, referrals to sportsmen organizations were unsuccessful primarily because of the remote nature of many DWAs. We have learned that coyote hunting and trapping effort can be successfully managed through voluntary efforts in DWAs in close proximity to organized towns. In the more remote DWAs we’re most successful when funding is available to pay hunters and trappers to remove coyotes from specific areas.

Appendix 1

Adjusting Any-Deer Permits for Winter Severity

The purpose of altering the number of Any-Deer permits is to regulate the magnitude of legal hunting mortality of does. When the various mortality factors are additive, altering the level of legal kill of does will affect the magnitude of all-cause mortality rates. In this way, manipulating the hunting kill enables the manager to achieve population increases if total doe losses are kept below the replacement or recruitment rate. Conversely, increasing the hunting kill of adult does would lead to population decreases, if this causes total losses to exceed recruitment. Clearly, this method of population regulation works best where hunting losses are a major source of total annual losses of does. This is the case in central and southern WMDs. Elsewhere, hunting is such a small component of total annual losses that herd response to doe harvest manipulations is slow, and rather tenuous, particularly when severe winters occur.

Above (or below) average winter losses are compensated by reducing (or increasing) Any-Deer permits by an amount equivalent to the difference between the threshold WMR and the current winter WMR.

Rules of Thumb: If the WMR for the current winter in a given WMD exceeds the threshold WMR, then a deer population decline is assumed. Compensatory reduction in doe harvest equivalent to the magnitude of excess winter losses (mean threshold WMR – current WMR expressed as % of wintering population) is required when the herd is at or below the target population. When above target, compensation for winter losses is optional.

If the WMR for the current winter is below the threshold WMR, then a population increase is assumed. A compensatory increase in doe harvest equivalent to the difference between mean threshold WMR and current WMR is required when the herd is at or above the target population. When below target, compensation for improved winter survival following mild winters is optional.

If the WMR for the current winter falls within the range of WMR indicated by the acceptable WSI Range, compensatory adjustments in legal doe harvest for winter severity is unnecessary.

There is a time lag between onset of increase of doe mortality, and recovery of the standing crop of does to prior levels. This lag results from the time necessary for recruits to attain reproductive age (usually by age 2). Because of this lag effect, compensatory adjustments in doe harvest are to be implemented for a minimum of two consecutive years.

Rule of Thumb: During the second year following a severe winter, harvest adjustments of at least ½ the reduction in doe harvest during the previous year will be implemented if the herd remains below target. During the second year following a mild winter, harvest adjustments of at least ½ the increase in doe harvest during the previous year will be implemented if the herd remains above target.