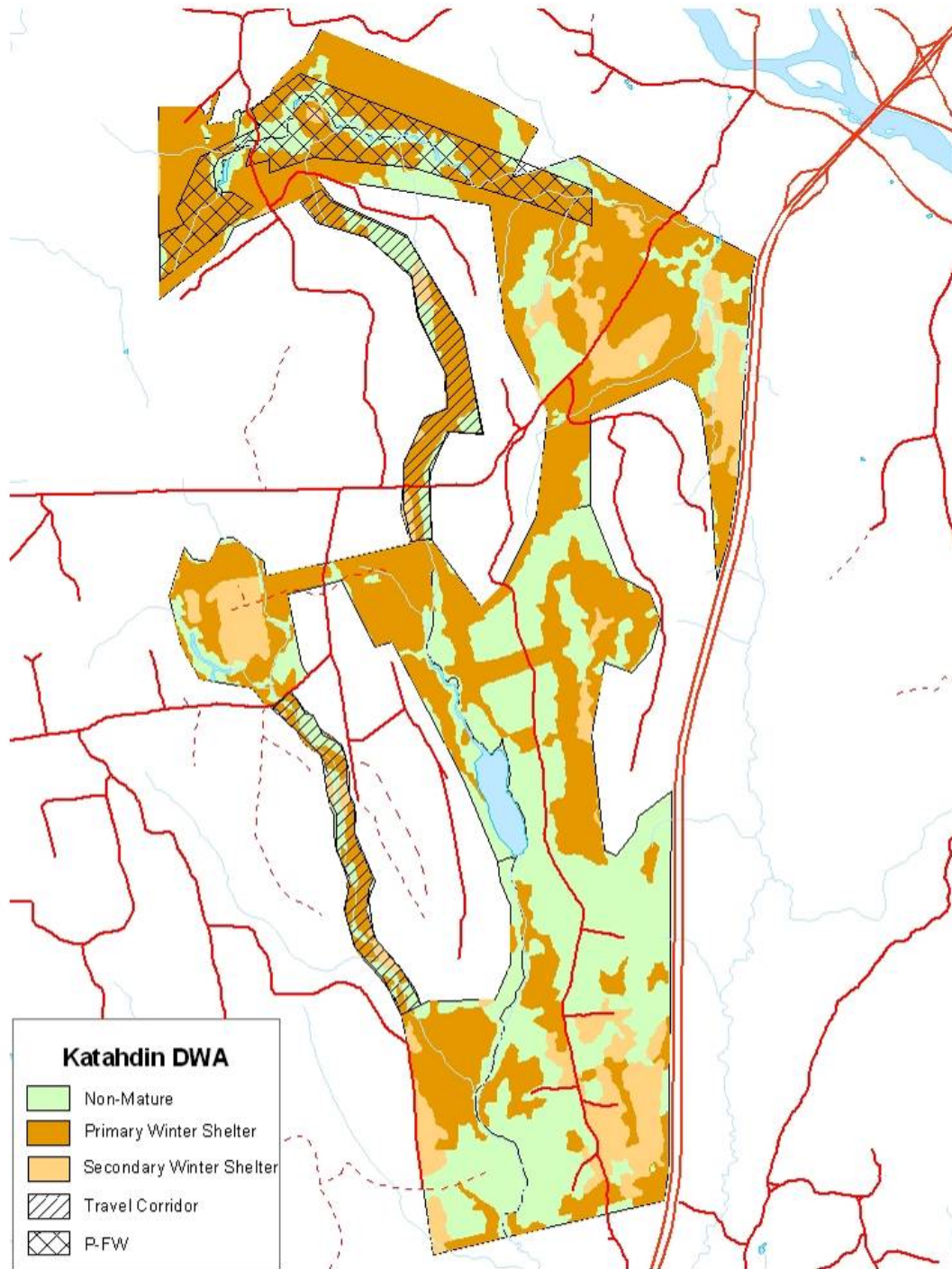


Guidelines for Wildlife: Managing Deer Wintering Areas in Northern, Western and Eastern Maine



Acknowledgements

This document is a publication of the Maine Department of Inland Fisheries and Wildlife. The Joint Standing Committee on Inland Fisheries & Wildlife of the 123rd Legislature prepared a Resolve, LD 823, directing the Commissioner “to review existing programs and efforts related to creating, enhancing and maintaining critical deer habitats in the state...”. The Northern and Eastern Maine Deer Task Force reviewed, discussed and considered many factors contributing to low deer numbers and developed a series of recommended strategies to rebuild deer populations.

Of the final Task Force recommendations, they specifically recommended MDIF&W, Maine Forest Products Council and the Small Woodland Owners Association of Maine take the lead in developing DWA management guidelines to be shared with all forest landowners. This document is the result of almost a year of collaboration, research, meetings and field tours to develop a biologically sound strategy for managing deer wintering area habitat.

Inland Fisheries and Wildlife would like to thank all the wildlife biologists, foresters, and landowners from the northeastern states and provinces who shared their knowledge and opened their land to support the development of these guidelines.



Introduction

The well-being of Maine's deer herd depends, in part, on efforts of the Maine Department of Inland Fisheries and Wildlife (MDIF&W) and private landowners. Maine is almost as large as the other New England states combined, yet private landowners own 94% of the land in the State. Private landowners are integral to conserving Maine's wildlife heritage and natural resources.

These guidelines will assist landowners, loggers, foresters, and others in understanding how DWAs function and can be maintained using flexible but specific management prescriptions.



These guidelines can be applied over large geographic areas where local variations in deer use, topography, stand types, soils and land management strategies may occur. Using these guidelines along with MDIF&W staff consultation and local forester's knowledge to adjust for these site-specific variations will yield the best results.

These guidelines will increase the predictability and flexibility of DWA management recommendations. Cooperative working relationships between landowners and MDIF&W improve identification, monitoring and information sharing on areas used by deer and help guide timber harvesting activity.

Overview

Maine's white-tailed deer occupy the northeastern part of the species' range in North America. At the edge of their natural range, deer rely on specific winter habitat when severe weather threatens the animals' survival.

To survive the winter season, deer seek habitats with a combination of cover and food that minimizes net energy loss. As winter conditions change from mild to moderate and then severe, the relative importance of cover versus food changes. Deer winter habitat has been defined for managing the winter habitat requirements. During the snow-free period of the year from spring to fall, deer range over most of the landscape and use a wide variety of forest and non-forest vegetation communities. However, as snow accumulates and temperature drops, deer spend more time in older conifer-dominated forest stands associated with watercourses and valleys. Deer often return to winter in the same locations from year to year. These traditionally used areas are called deer wintering areas or deer yards and are the focus of forest management activities to provide winter habitat.

Deer wintering areas include a variety of habitat components that may change with forest condition and management strategy. These habitat components contribute to the long-term functioning of a deer wintering area as a source of winter shelter and food. White-tailed deer utilize predominantly mature coniferous forest habitat during critical winter conditions. Suitable habitat areas provide relief from winter in more stable temperatures and humidity conditions, and lower snow depths. These areas are used approximately 3 to 5 months in the winter when snow depths are greater than 12 inches. Deer movements are considered to be restricted when snow depths reach 16 inches. While shelter is the most important component of these areas for wintering deer, an interspersed of forest stands providing forage and sunlight is also required to provide quality habitat. Habitat suitable for deer in winter also provides quality habitat for numerous other species associated with mature forest.

DWA Habitat Components

Deer wintering areas include a variety of habitat components that may change with forest condition and management strategy. These habitat components contribute to the long-term functioning of a DWA as a source of winter shelter and food.

Primary Winter Shelter

Primary Winter Shelter (PWS) consists of forest stands that provide shelter for deer during the most severe winter conditions. PWS has the following:

- ◆ Softwood crown closure $\geq 70\%$ mixed or solitary stands of cedar, hemlock, spruce, and fir; and
- ◆ Stand height ≥ 35 feet.

Secondary Winter Shelter

Secondary Winter Shelter (SWS) consists of forest stands that provide adequate shelter for all but the most severe winter conditions. SWS has the following:

- ◆ Softwood crown closure between 50% and 70% mixed or solitary stands of cedar, hemlock, spruce, and fir; and
- ◆ Stand height ≥ 35 feet.



Non-Mature/Future Shelter Stands

Stands mapped within a DWA that do not currently meet PWS or SWS definitions provide forage (woody browse) between and adjacent to stands that provide shelter. These stands enhance the value of a DWA, especially when managed to attain PWS or SWS criteria.

DWAs often include areas such as south facing slopes that enhance solar gain during late winter. These areas may not meet SWS or PWS criteria, but provide microclimatic benefits that contribute to DWA functioning. Local knowledge is critical to identifying these areas.

Travel Corridors

Successful functioning of DWAs on a long-term basis requires travel corridors within the DWA. Traditionally used corridors often follow streams and wetlands, or topographic features such as ridgelines and valleys. Functional corridors are wide enough to provide deer with sheltered travel ways throughout the yard, and are located to maintain direct access to winter shelter.

Winter Foods: Browse & Litterfall



Deer rely on fat reserves and an ability to minimize energy expenditures to survive during winter. Generally, hardwood and softwood winter browse only slows seasonal weight loss in deer, relative to eating nothing. Only the leaves of northern white cedar can sustain deer in winter without causing serious weight loss. Cedar and hemlock are long-lived species that provide high quality winter shelter and high-value winter food, although often in low abundance as ground-level forage in DWAs.

Litterfall is a secondary source of food for wintering deer. It consists of softwood twigs, especially of cedar and hemlock, and arboreal lichens dislodged from the canopy throughout the winter by snow, ice and wind that become

available to deer on the snow surface. As softwood stands mature, they develop more lichen biomass and contribute more litterfall. In spruce/fir dominated DWAs, balsam fir contributes the majority of lichen and litterfall biomass. While difficult to measure, litterfall may comprise as much as 50% of the winter diet for deer and are independent of browse pressure.

Spring Foods

Winter browse and litterfall is very low in protein and insufficient to support deer fetal development. Most fetal development is delayed until the final trimester of pregnancy, generally after late-March. The availability of higher quality spring foods such as grasses and clovers close to DWAs can influence survival of adults, body condition of lactating females, and thus survival of nursing fawns.

Management Guidelines

Manage each DWA as a network of mature interconnected softwood stands interspersed with non-mature, future winter shelter stands and smaller open-canopy patches of forest using these objectives:

Winter Shelter Management

- ◆ Maintain $\geq 50\%$ of DWA acreage in a combination of PWS and SWS;
 - Maintain one half or more of this winter shelter acreage as PWS;
 - Individual blocks of winter shelter should be ≥ 25 acres and ≥ 15 chains (1 chain = 66 ft) wide;
 - All stands meeting above criteria should be connected with travel corridors (see management recommendations below);
- ◆ The remainder of the DWA should be in non-mature age-classes and managed to attain PWS or SWS criteria;
 - Maintaining ≥ 5 age classes in a DWA allows the best opportunity for meeting winter shelter goals through time;
- ◆ As site conditions allow, land managers should strive to continually improve the quality of winter shelter by managing the species composition;
 - Stands should be managed to favor and enhance the species most suited to the site while considering their abundance, distribution and winter shelter value; and
 - Removing a portion of the hardwood component can improve cover, produce browse and maintain tree health. However, care should be taken to avoid reducing the wind firmness of the residual overstory.

Special Considerations for Winter Shelter Management

In certain situations, conditions may preclude achieving desired levels of winter shelter. These include, but are not limited to:

- ◆ A skewed forest age class structure in a DWA that requires extensive forest intervention to develop a more balanced age class distribution; and/or
- ◆ Natural influences such as insects, disease, fire, or storms.

Before addressing the above factors, landowners and MDIF&W staff should discuss management plans for individual DWAs.

Travel Corridor Management

Travel corridors should be part of management plans to ensure uninterrupted deer mobility and access throughout the DWA. Depending on stand and site conditions and deer-use patterns, travel corridors can be permanently established or relocated as needed within a DWA. Permanent travel corridors should be regarded as a separate stand, and harvested lightly to preserve maximum shelter value at all times. Other guidelines for travel corridors are:

- ◆ Travel corridors should be ≥ 10 chains wide, as topography and natural stand types allow;
- ◆ Manage travel corridors for PWS criteria;
 - Travel corridors can meet SWS criteria when abutting winter shelter stands meeting PWS criteria;
- ◆ Travel corridors should be harvested using single-tree or group tree harvesting (forest openings < 40 feet in width); and
- ◆ Travel corridors meeting these conditions count toward the overall goal of maintaining 50% winter shelter.

Winter Browse Management

Maintaining an interconnected network of winter shelter and future winter shelter stands, interspersed with smaller open-canopy patches of forest, can enhance the functional area of the DWA. During moderate winter conditions, deer use a greater area of the DWA. This helps reduce browsing pressure in optimal winter shelter stands, while providing access to more nutritive browse to maintain health and condition. As conditions become more restrictive, deer favor stands with optimum winter shelter over stands with less shelter but more browse.

A constant supply of high quality browse, very close to the winter shelter, can usually be produced in the course of other scheduled treatments. Consider the location and time interval between harvests in and adjacent to a DWA to manage a constant supply of browse adjacent to winter shelter stands. These areas will shift over time as the winter shelter stands mature and are regenerated.



Spring and Autumn Food Management

Herbaceous seeding of logging roads, log landings, and other permanent forest openings can help provide early spring food as deer disperse to their summer home range and provide autumn foods as deer build fat stores. Openings where snowmelt will occur earliest, such as south facing slopes, are prime locations for seeding. Seeding can be as simple as one-time seeding of new roads and landings (dormant season seeding has produced good results) or seeding with the addition of lime, fertilizer, and mulch.

Harvest Timing

Harvesting is encouraged during wintering conditions to protect regeneration, provide a one-time but beneficial source of food for deer (tops, downed lichen, etc.), and enhance deer mobility during the operation through snow compaction by logging equipment. Winter harvesting also maximizes frozen ground conditions for harvesting low-lying softwood stands near water bodies. Summer or fall harvests may be prescribed when land scarification is desired for a favorable spruce seedbed.

Other Forest Management Activities

Road Construction

Roads located in DWAs may be detrimental to deer by:

1. Fragmenting winter shelter;
2. Allowing easier access for predators, especially coyotes, and opportunities for human disturbance;
3. Being an impediment to winter travel;
 - a. Snow banks on plowed roads may be a barrier to deer crossing the road, or may hold deer in the roadway where they are exposed to vehicular accidents and to being run by traffic; or
 - b. Unplowed roads create openings that break the cover and may hinder deer movement. The wider the opening, the greater the impediment.



Due to the above concerns, all attempts should be made to locate roads outside of DWAs. However, this is not always achievable due to various limitations of topography and site. Where no reasonable alternatives exist, non-permanent, minimal disturbance “winter” roads are the preferred option to minimize the footprint. Where unavoidable, permanent all season gravel roads may be located within a DWA.

Roads constructed in DWAs should strive for the following to maintain deer mobility:

- ◆ Road length and right-of-way clearing should be kept to a minimum while allowing for ditches, mining for road surface material, snow removal and periodic truck turnouts and landings;
- ◆ For every quarter-mile of road in a DWA identify stream, wetland and/or historical deer crossing areas where tree removal can be limited to the travel surface only, for a road length of two chains; and
- ◆ Winter roads should be allowed to reforest when capable, otherwise apply lime, fertilizer, and an herbaceous seed mixture to provide forage for deer.

Herbicide Application

The present goal of herbicide application is to release established softwood regeneration from hardwood competition on harvested softwood sites. The broad goal of DWA management also seeks to promote the timely reestablishment of softwood cover on harvested sites. The proper use and application of herbicides in DWAs may be appropriate, particularly to balance a skewed age class structure.

Precommercial Thinning

Precommercial thinning (PCT) of naturally regenerated stands is a silvicultural tool used to control crop tree spacing and encourage earlier softwood maturation, as well as controlling the stand's species composition. Within DWA areas subjected to PCT, landowners should consider encouraging tree species that will provide optimum shelter values or to help balance a DWA with a skewed age class structure by more quickly attaining conforming cover status.

Gravel Excavation

Gravel extraction in a DWA can result in the loss of existing softwood cover or established softwood regeneration, and can disrupt deer movement within the DWA.

Since sand and gravel occur in limited locations and quantities, extraction is essential to forest management. Gravel should be located close to current road construction projects to be economical. Guidelines for gravel extraction include:

- ◆ Avoid development of gravel areas in travel corridors and winter shelter;
- ◆ Each new gravel pit should be limited to 1 acre of working pit area; and

- ◆ As gravel pits are expanded, reclaim, stabilize and revegetate spent portions with suitable softwood seedlings or with an herbaceous seed mixture designed to maximize winter shelter or food availability for deer, respectively. Gravelly sites typically need lime, fertilizer and mulch.

Other Structures, Uses, or Services

Development resulting in the permanent loss of shelter values is not compatible with DWA management goals. Landowners should consult with MDIF&W before any of the following structures, uses or services are established within a DWA:

- ◆ The erection of buildings and other structures, excluding temporary "warming shacks" used during timber harvesting, that are removed from the site after harvesting;
- ◆ Agricultural activities;
- ◆ Trails intended for winter recreation;
- ◆ Campgrounds intended for winter use;
- ◆ Recreational camps;
- ◆ Commercial sporting camps;
- ◆ Utility infrastructure;
- ◆ Solid waste disposal sites;
- ◆ Land application of septage, sludge and other residuals, and related storage and composting activities;
- ◆ Water impoundments; and
- ◆ Any other structures, uses, or services that could substantially affect or diminish the DWA as addressed under the long-term management plan.



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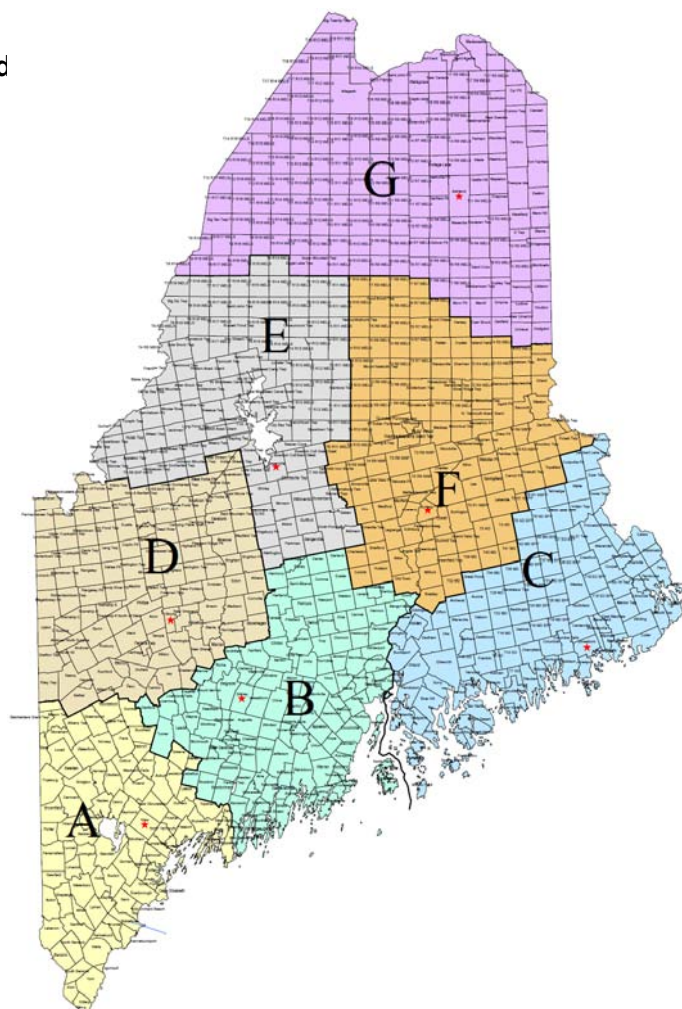
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References

- Reay, R., Blodgett, D., Burns, B., Weber, S., and Frey, T.
1990. Management Guide for Deer Wintering Areas in Vermont.
- Lavigne, G.
1999. White-Tailed Deer Assessment and Strategic Plan. Maine Department of Inland Fisheries and Wildlife.
- Pekins, P., & Tarr, M.
2009. A Critical Analysis of the Winter Ecology of White-Tailed Deer & Management of Spruce-Fir Deer Wintering Areas with Reference to Northern Maine.
- Verme, L.J.
1977. Assessment of Natal Mortality in Upper Michigan Deer. JWM 41:700-708.
- Special Management Practices for Deer Wintering Areas. Nova Scotia.