

NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE SPECIFICATION GUIDE UPLAND WILDLIFE HABITAT MANAGEMENT, CODE 645

GENERAL SPECIFICATIONS

Plans and specifications for upland wildlife habitat management shall be prepared for each site or management unit according to Maine NRCS' conservation practice standard 645 criteria, specifications, and operation and maintenance requirements.

As required by law, chemicals to be applied under this standard will be only for uses listed on the container label, and all label directions and precautions must be followed. Selection of a product shall be based on: (a) product effectiveness, (b) non-target species impacts, (c) toxicological risks, and (d) off-site movement of chemicals.

UPLAND HABITATS or LANDUSE

GRASSLAND, OLDFIELD, SHRUBLAND, EARLY SUCCESSIONAL FOREST (young forest ≈ to 20 years), & POLLINATORS

NRCS conservation practice standard *Early Successional Habitat Management*, code 647, has detailed specifications for management of these habitats. Practice 647 can be used as a facilitating practice to achieve criteria and specifications of practice 645.

Grassland

Areas to Target for Management:

1. Existing large grassland areas – Large blocks of grassland tend to be much more important for grassland birds species than many small parcels. Other large grassland areas of importance to grassland birds include locations such as existing or abandoned airports and military installations. Efforts to restore or enhance grassland habitat within these areas is encouraged; however, it may be prudent to exclude areas proximal to active runways to minimize the risk of plane - wildlife collisions.

2. Open landscapes – Focus on sites located within a ½ mile of other grassland habitats such as pastures, hay fields and wet meadows. Small, isolated parcels of grasslands in landscapes that are heavily wooded have limited potential to support grassland birds.

3. Recently abandoned sites - In general, do not try to reclaim grassland on sites that are >10 years post-abandonment. The cost can be prohibitive and the results may be less than satisfactory. Dry, gravelly sites with limited woody encroachment may be an exception.

Grassland Bird Management Strategies

The objectives will be to target larger contiguous blocks of grassland and other open land to attract area sensitive birds and to enhance nesting and foraging habitat.

1. Grassland size - In order to support an array of grassland dependent bird species within an area, contiguous blocks of grassland at least 100 acres in size provide the greatest potential. Where 100 acre tracts or larger are unavailable, sites at least 20 acres in size should be targeted. On isolated patches smaller than 5 acres, manage for shrub habitat rather than grassland because shrub dependent wildlife species are generally not as area sensitive as grassland species. On sites from 5 to 20 acres in size, consider the surrounding landscape to determine if grassland habitat should be the focus.

2. Grassland shape - Consider ways to minimize the grassland edge to area ratio by favoring circular or square plots rather than long, linear plots (i.e., less than 600 feet wide) due to the increased rates of nest predation on narrow plots. Also, avoid establishing grasslands with very irregular borders as this also increases the edge to area ratio.

3. Deferred Mowing - Maximum benefits will occur when mowing is deferred until after the primary nesting season which runs from April 15 to August 1.

Allowable Exceptions:

- Mowing or disturbance during the primary nesting season is necessary to maintain plant community health to benefit target wildlife. For example, mowing is part of a strategy to help control/reduce the spread of bedstraw which may impede grassland bird use of a field.
- On hayland an early harvest during May (no later than May 31st), with 65-days before the

next haying (e.g., No haying from May 27th to Aug 1st) is a successful model that balances forage production with grassland bird recruitment (Perlut et al. 2011).

4. Consolidate grassland patches -

Connected or unified grassland blocks provide increased habitat, reduce edge effects and can result in increased wildlife species diversity. Larger grassland blocks can be created by concentrating efforts near existing grasslands or open wetlands.

Consideration should also be given to consolidation of adjacent grassland fields through the elimination of hedgerows or tree lines in areas where open land occupies a considerable amount of the surrounding landscape.

CROPLAND

Consider wildlife needs prior to establishment of grass and herbaceous cover in filter strips, field borders, grassed waterways, conservation buffers and other vegetative practices commonly used on cropland.

FORESTLAND (>20 years)

Much of the following has been adapted from Elliott (1999) and DeGraaf et al. (1992), however other sources were also used and are listed in the references section.

Avoid timber harvests during April to July to avoid disturbing nesting and denning animals.

Harvests and commercial thinning operations should occur while the ground is frozen.

Deer Wintering Areas

Deer wintering areas (DWA) are primarily areas of dense coniferous cover, (hemlock, balsam fir, spruce spp., and cedar), typically associated with riparian areas, interspersed with mixed stands of hardwoods and softwoods that provide essential cover and food during winter months.

Litterfall – softwood twigs, especially those from northern white cedar and eastern hemlock, and arboreal lichens dislodged from the canopy by snow, ice and wind – are an important source of food for wintering deer. As softwood stands mature, they contribute more total litterfall. In spruce/fir dominated DWAs, balsam fir contributes the majority of lichen and twig litterfall biomass. Litterfall may comprise as much as 50% of a deer's winter diet.

Management for DWAs:

Involving Maine Department of Inland Fisheries and Wildlife (MDIFW) biologists during planning within or adjacent to DWA's is recommended.

The following are general management guidelines:

- Create and/or maintain $\geq 50\%$ of DWA acreage as coniferous winter shelter (cedar, hemlock, balsam fir and spruce) providing a softwood crown closure $\geq 50\%$.
 - Maintain 1/2 or more of this coniferous winter shelter with a crown closure $\geq 70\%$ and achieving a height of at least 35 feet.
 - Individual blocks of winter shelter should be ≥ 25 acres and ≥ 15 chains (990 ft; 1 chain = 66 ft) wide.
- All stands meeting above criteria should be connected with travel corridors. Travel corridors meeting the following conditions count toward the overall goal of maintaining 50% winter shelter.
 - DWA connecting corridors should be ≥ 10 chains (660 ft) wide if topography and natural stand types allow.
 - Manage travel corridors to provide winter shelter.
 - Travel corridors should be harvested using single-tree or group tree harvesting (forest openings < 40 feet in width).
- The remainder of a DWA should be in non-mature age-classes and managed to become winter shelter.
- Maintain at least **5** age classes (a.k.a., all-age management) in a DWA.
 - All-age management can involve uneven-age management within a stand using single tree and/or group selection, or a DWA composed of multiple even-age stands of varying age.
 - For predominately coniferous stands, the use all-aged management on a 120 year or longer rotation and a 15-year harvest or stand entry cycle is preferred.
- As site conditions allow, land managers should strive to continually improve the quality of winter shelter through management.
 - Stands should be managed to favor and enhance the species most suited to the site while considering their winter shelter value. For example, northern white cedar and eastern hemlock are slow growing, long lived and should be maintained and encouraged where and when possible.

– Removing a portion of the hardwood component can enhance winter shelter value and make available coarse and fine hardwood woody debris for browse. However, care should be taken to avoid reducing the wind firmness of the residual overstory.

- Harvests and commercial thinning operations should occur while the ground is frozen.
- Pre-commercial thinning and herbicide application should occur when needed to achieve the desired outcome.
- Further detail concerning management of deer wintering areas can be found in the MDIFW's (2010) DWA Management Guidelines.

Travel Corridors and Riparian Forest

Forested strips serving as connection corridors must:

- be, at a minimum, 5 chains (330 feet) wide;
- provide forest canopy cover (50 – 100% canopy closure).

Riparian areas are important landscape linkages between larger existing ecological communities. Riparian forest, except if a mapped Deer Wintering Area, (see above), will be managed according to NRCS conservation practice standard *Riparian Forest Buffer*, code 391.

Refer to Subpart B, part 613.00 of the *National Biology Handbook* for design and planning considerations for corridor development.

Wildlife Tree and Structure Retention

Tree Inclusions

Retain deciduous inclusions within coniferous forests and coniferous inclusions within deciduous forest. These areas increase biodiversity, conifers provide thermal and persistent cover, and hardwoods provide a source for cavity and snag trees.

Snag, Den and Nest Trees

Snag Trees include standing dead, or partially dead trees which are at least 6-inches dbh, 20 feet tall (“stub” if shorter), and ½ covered by bark. **Cavity Trees** are live or dead trees of any diameter containing a natural cavity or exfoliating bark used by wildlife for nesting, brood rearing, hibernating, roosting, daily or seasonal shelter and escape. **Nest Trees** contain nests built by squirrels, crows and hawks that resemble a platform of sticks and

leaves when viewed from the ground. These may be used by owls or re-used by hawks.

Natural stands of both deciduous and coniferous forest have relatively large amounts of dead, standing trees. Incorporate forest management and harvest strategies to ensure a continual supply of snag, cavity and nest trees of various size classes and diameter. Riparian forest buffers are good locations to manage for snag, cavity and nest trees.

The following management specifications from are adopted under this standard:

- Retain or manage for a minimum of 4 snag or den trees per acre. Preferably, one in four should be > 24 in. dbh, with the other 3 > 14 in. dbh (Elliott 1999). At a minimum, two shall be > 10 in. dbh and 2 > 6 in. dbh,
- Manage uneven-age stands so at least 3 – 5% of the stand consists of snags and den trees (Elliott 1999),
- In even-aged stands, leave at least a ¼ acre patch uncut for every 10 acres harvested with patches selected based on the presence of existing snags or cavity trees.
- Snags, cavity and nest trees may be distributed among a forested landscape or clumped.

Downed Woody Debris

Woody debris consists of sound and rotting logs and stumps and other woody material greater than 3 inches in diameter on the forest floor. Maintaining coarse woody debris is a critical element of managing for biodiversity and nutrient cycling.

The quantity and size of woody debris needed in the forest is not well-defined. Current harvest techniques tend to create large amounts of logging slash. What tends to be lacking is a supply of large downed woody debris.

At a minimum retain at least 3 logs per acre \geq 5 in. dbh, and > 20 feet long with some bark and limbs attached. Preferably, retain large debris with 5 logs > 10 inches dbh and > 20 feet long, over retention of smaller logs to meet large woody debris retention goals.

Incorporate forest management and harvest strategies to ensure a continual supply of downed woody debris, with special emphasis place on large debris. For example, preserve existing downed woody debris by having logging equipment avoid disturbing pre-existing large

downed logs, stumps and uprooted stumps. If snags are cut for safety concerns prior to timber operations, leave the felled snag on-site.

When creating coarse woody debris from cut material, use the following guidelines:

- larger pieces of coarse woody debris are more valuable than smaller pieces – strive for logs that are a minimum of 6 inches diameter, at least 6 feet long and with bark on;
- “bark on” is preferred to “bark off”;
- dispersed coarse woody debris is preferred over large accumulations (although some piles are good and can be used by wildlife);
- logs oriented along contours are more likely to be used.

Maine animals that use snag, cavity, or downed woody debris are listed in Appendix C of Elliott (1999), and snag requirements of cavity excavators are provided in Appendix D.

Apple Trees

Their renovation and release shall follow specifications developed by the University of Maine Cooperative Extension, Bulletin #2409 or #7126, respectively.

Mast Trees

Species producing nuts, seeds, berries and/or fruit shall be retained in large enough numbers to ensure a reliable annual food supply, and a supply of food through the growing season.

Incorporate forest management and harvest strategies to ensure a continual supply of productive mast trees. This usually involves management for superior stock and thinning for canopy release of dominants, mast-tree regeneration, and development of a mast-bearing shrubs layer.

Important mast producing species in Maine are listed by Elliott (1999) in Appendix E.

HABITAT RESTORATION

Restoration is defined as assisting the recovery of a degraded, damaged, or destroyed natural upland community.

Restoration activities include, but are not limited to planting of native plant materials, mechanical, chemical, biologic, and cultural means to manipulation vegetative to achieve the intended goals.

The following must be included in all habitat restoration plans:

1. the name and description of the native ecological community to be restored;
2. a description of the current condition and the stressors (i.e., invasive exotic plant invasion, degradation by access roads, past land use, etc.);
3. a description of the acceptable and achievable restored condition;
4. a description of needed management actions and timetable to achieve restoration goals;
5. operation and maintenance requirements; and,
6. monitoring needs to document whether success has been achieved or management needs to be modified to achieve success.

Restoration is achieved when all or most of the following conditions are achieved:

- the system contains a characteristic assemblage of indigenous species and structure expected for the natural community;
- the restored community can sustain stable, normal ecological functions and species assemblages; and,
- disruptive forces (e.g., introduced exotic or invasive species, further fragmentation, development or changing land use) threatening the integrity of the native community are eliminated to the extent practicable.

HABITAT SUPPLEMENTATION

Cover and Food Plantings

For planting of tree and shrubs refer to NRCS conservation practice standard *Tree and Shrub Planting*, code 612 for specifications. A list of high value wildlife trees and shrubs producing nuts, fruits or berries is provided in Appendix E of Elliott (1999).

For herbaceous plantings refer to the appropriate NRCS conservation practice standard (e.g., *Conservation Cover*, code 327; *Critical Area Planting*, code 342; *Forage and Biomass Planting*, code 512; *Filter Strip*, code 393; *Field Border*, code 386). Recommended grass and herbaceous species providing high value food and cover for wildlife are provided by [ME-01](#) in the *National Biology Handbook*.

Planting of tall fescue (*Festuca arundinacea*), quackgrass (*Elytrigia repens*), and reed canarygrass (*Phalaris arundinacea*) is prohibited.

Herbaceous plantings under this standard will:

- be suited to site conditions;
- have soils samples taken from the planned planting location according to sampling protocols of the Maine Soil Testing Service;
- have soil amendments applied according to soil sample test results, and NRCS conservation practice standard *Nutrient Management*, code 590, *unless* native warm season grass plantings are involved.
- involve proper seedbed preparation for the species, and site location; and,
- if from a commercial source,
 - seed must be certified and properly labeled according to Maine and Federal Law;
 - seed will not contain primary noxious weeds, and secondary noxious weeds are within allowable state limits.

Non-native, non-invasive plantings are allowed under the following conditions:

- when native plant regeneration cannot produce desired cover and food;
- locally adapted native plant materials are not available;
- native plant materials are too expensive to be practicable; and/or
- native plant colonization will take too long to establish (e.g., soil stabilization, invasive species concerns).

Areas planted to non-native, non-invasive plants with the *primary* objective to provide supplemental grains, herbaceous forage and seed for wildlife consumption shall:

- be no less than ¼ acre and no more than 3 acres in size, unless authorized by the State Resource Conservationist;
- be within or share a border with land managed for the enhancement of wildlife habitat (e.g., wildlife cover, browse, etc);
- not exceed 1 acre per 25 acres of actively managed land;
- be located on existing open ground (e.g., fields, road edges, fields, log landings, etc.)

Creation of Snag and Cavity Trees

If possible, favor un-merchantable (non-commercial) or poor quality trees. Better results will occur if non-clonal species are girdled.

(A) Girdling

1. During the growing season (e.g., July – August), use a sharp axe or chain saw to

make two cuts circling the tree at less than breast height and about 4 inches apart. The cut depth should go through the cambium, but be less than 1 inch deep. ,

Remove the bark between the two cuts. One can make shallow surface cuts into the sapwood.

(B) Cut and Frill or Hatchet Injection

- Apply appropriate chemical using a hypo-hatchet, or
- Make frills (outward hanging bark and sapwood) by overlapping downward ax-cuts around the base of the tree, and apply an appropriate chemical into the frill.

(C) Cavity Trees

- Cavity and den starts can be started by cutting a small limb (4- to 6- inch diameter) flush with the trunk breaking the collar where the limb attaches to the trunk, or
- Chop out a 6 x 6-inch section of bark at the base of a suitable tree.

Disease-causing pathogens will enter the wound and start the decay process to create cavities.

Creation of Large Woody Debris

When creating coarse woody debris from cut material, use the following guidelines:

- large pieces of coarse woody debris are more valuable than smaller pieces – strive for logs that are a minimum of 6 inches diameter, at least 6 feet long and with bark on;
- “bark on” is preferred to “bark off”;
- dispersed coarse woody debris is preferred over large accumulations (although some piles are good and can be used by wildlife);
- logs oriented along contours are more likely to be used.

REFERENCES

- Calhoun, A. J. K. and P. deMaynadier. [2004](#). Forestry habitat management guidelines for vernal pool wildlife. MCA Technical Paper No. 6, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York. 32pp.
- DeGraaf, R.M. and M. Yamasaki. 2001. New England wildlife: habitat, natural history, and distribution. University Press of New England, Hanover, NH. 482pp.
- DeGraaf, R. M. et al. [1992](#). New England wildlife: management of forested habitats. Gen. Tech. Rep. NE-144. Radnor, PA: U.S. Department of

- Agriculture, Forest Service, Northeastern Forest Experiment Station. 271pp.
- DeGraaf, R.M. and A.L. Shigo. 1985. Managing cavity trees for wildlife in the northeast. Gen. Tech. Repl NE-101. Broomall, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 21pp.
- Elliott, C.A (ed.). [1999](#). Biodiversity in the forests of Maine: guidelines for land management. Bulletin #7147, University of Maine Cooperative Extension. Orono, ME. 168pp.
- MDIFW. [2010](#). Guidelines for wildlife: managing deer wintering areas in northern, western and eastern Maine. August, ME. 9pp.
- McCullough, M. et al. [2003](#). Maine's endangered and threatened wildlife, Maine Department of Inland Fisheries and Wildlife. Augusta, ME. 116pp.
- Mitchell, J.C., A.R. Breisch, and K.A. Buhlmann. 2006. Habitat management guidelines for amphibians and reptiles of the northeastern United States. Partners in Amphibian and Reptile Conservation, Technical Publication HMG-3, Montgomery, Alabama. 108pp.
- Moesswilde, M. [2004](#). Best management practices for forestry: protecting Maine's water quality. Department of Conservation, Maine Forest Service, Forest Policy and Management Division, Augusta, ME. 93pp.
- Minnesota Department of Natural Resources. 1992. Woodworking for wildlife: homes for birds and mammals. St. Paul, MN 111pp
- Oehler, J.D. et al. [2006](#). Managing grasslands, shrublands, and young forest habitats for wildlife – a guide for the northeast. Northeast Upland Habitat Technical Committee, Massachusetts Division of Fish and Wildlife. 104pp.
- Perlut, N.G., A.M. Strong, T.M. and T.J Alexander. 2011. A model for integrating wildlife science and agri-environmental policy in the conservation of declining species. *Journal of Wildlife Management* 75:1657-1663.
- Sepik, G. F., R. B. Owen, Jr., and M. W. Coulter. [1981](#). A landowner's guide to woodcock management in the Northeast. Maine Agric. Experimental Station, Misc. Rep. 253. 23pp.
- Silvy NJ. (Ed.). 2012. *The Wildlife Techniques Manual*. Two volumes, 7th edition. The Johns Hopkins University Press, Baltimore, Maryland, USA. 1136pp.
- Sullivan, T.P, D.S. Sullivan, P.M.F.Lindgren, and D.B. Ransome. 2012. If we build habitat, will they come? Woody debris structures and conservation of forest mammals. *Journal of Mammalogy* 93(6):1456-1468.
- University of Maine Cooperative Extension. [Bulletins and Fact Sheets](#).
- Schupp, J. R. (no date). Renovating old apple trees. Bulletin #2409, University of Maine Cooperative Extension, Orono, ME 2pp.
- USDA-NRCS. [2010](#). American Woodcock: Habitat Best Management Practices for the Northeast. Scot J. Williamson (ed.). *Wildlife Insight* No.89. Washington, DC. 10pp.
- USDA-NRCS. [2004](#). National Biology Handbook. Washington, DC.
- [ME-01](#). Upland Wildlife Grass & Herbaceous Planting Recommendations for Maine.
 - [ME-03](#). Pollinator Biology and Habitat: New England Pollinator Handbook.
- USDA-NRCS. [National Fish and Wildlife Habitat Management Leaflets and Technical Notes](#).