

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

RESTORATION AND MANAGEMENT OF DECLINING HABITATS

(acre)
Code 643

DEFINITION

Restoring and conserving rare or declining native vegetative communities and associated wildlife species.

PURPOSES

- Restore land or aquatic habitats degraded by human activity.
- Provide habitat for rare and declining wildlife species by restoring and conserving native plant communities.
- Increase native plant community diversity.
- Management of unique or declining native habitats.

NOTE: NRCS uses the term "wildlife" to include all animals, terrestrial and aquatic.

CONDITIONS WHERE PRACTICE APPLIES

On any landscape which once supported or currently supports the habitat to be restored or managed.

Declining habitats identified herein are those referenced for Minnesota as critically endangered, endangered or threatened ecosystems (Figure 1). The MN DNR Field Guides to Native Plant Communities should be used to further refine where it is appropriate to apply these practices. These declining habitats and the locations where they can be restored are:

Tallgrass Prairie - In the tallgrass prairie region of the state.

Oak Savanna – On areas that once supported savannas. Savannas typically occurred on prairie and transition soils.

Red Pine, Jack Pine and White Pine Forests

On areas that once supported native stands of Red, Jack and White pine.

Aspen Parkland – In the aspen parkland region of the state.

CRITERIA

General Criteria Applicable to All Purposes

- Methods used will be designed to protect the soil resource from erosion.
- Vegetative manipulations to restore plant and/or animal diversity can be accomplished by prescribed burning or mechanical, biological or chemical methods, or a combination of the four.
- Management measures must be provided to control invasive species and noxious weeds in order to comply with state noxious weed laws.
- To benefit insect food sources for grassland nesting birds, spraying or other control of noxious weeds will be done on a "spot treatment" basis to protect forbs and legumes that benefit native pollinators and other wildlife.
- Management activities are not to disturb cover during the primary nesting period of May 1 – August 1. Management and maintenance activities will generally be restricted to August 1 - September 30 and prior to the primary nesting season. Exceptions could be granted when necessary to maintain the health of a plant community or according to a management plan.
- Mowing may be needed during the establishment period to control weeds.
- Rotate periodic planned management or other treatments throughout the managed area.
- Where feasible, prescribed burning will be utilized instead of mowing. Refer to practice standard 338-Prescribed Burning.
- Native species seeded or planted will be adapted to the soil-site conditions.
- Seeding and planting rates will be adequate to accomplish the planned purpose.
- Only high quality and ecologically adapted native plant materials will be used.
- Planting dates, and care in handling and planting of the plant material will ensure that the established vegetation will have an acceptable rate of survival.

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Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact the MN Natural Resources Conservation Service in your area or download it from the electronic Field Office Technical Guide for Minnesota.

- Site preparation shall be sufficient for establishment and growth of selected species. Consider appropriate deprecation protection practices.
- Timing and use of equipment will be appropriate for the site and soil conditions.

Criteria for Enhancement of Existing Degraded Habitats

For sites that are not currently cultivated and still exhibit remnant characteristics of the pre-settlement habitat type, it is often best to attempt restoration and enhancement through management techniques such as prescribed burning, silvicultural techniques, brush and weed control, and interplanting with desired species. Refer to the maintenance recommendations section of each habitat type.

Criteria for Tallgrass Prairie Restoration

High species diversity is recommended to promote native community stability and function, to provide benefits to multiple wildlife species and to prevent establishment of invasive species.

Native prairie plant communities will be established utilizing seed harvested from existing Minnesota native prairies, or utilizing seed mixes comprised of Minnesota ecotype grasses, legumes and forbs, developed to reflect "native prairie" communities as determined suitable for specific site conditions.

All seed, including native harvest, shall be supplied as pure-live seed (PLS) and conform to Minnesota Seed Law including limits on noxious weed content and State labeling requirements. Documentation must be provided by the grower, and responsibility for obtaining documentation rests with the producer.

1. Protection of Existing Native Prairies:

DNR identified remnant prairie communities will be protected from non-local sources of seed.

Varieties/cultivars (selected germplasms) of native species will not be used adjacent to existing remnant prairies in an effort to limit genetic influences. A minimum isolation distance of ¼ mile is required.

Seed Origin:

Seed must come from local sources when planting buffers adjacent to identified remnant prairies. The following is a recommended sequence for obtaining seed/plants:

- Collected directly from the adjacent remnant prairie.
- Collected from a local remnant prairie within the same ecological sub-section.
- Collected from a remnant prairie within the same ecological section.

2. Restoration on Agricultural Fields and Other Disturbed Sites:

Constructed mixtures may be developed using Agronomy Technical Note #31.

Wild or native harvest mixtures meeting the minimum species diversity requirements noted in Agronomy Technical Note #31 will be considered adequate.

Maintenance:

Prairie communities are best managed by the use of prescribed grazing or prescribed fire. Other management techniques include mowing/haying and prescribed grazing. Periodic management will normally be required to maintain stand vigor and persistence of desired plant species.

Fall burns and early spring burns tend to favor forbs. Late spring burns provide maximum stimulus to warm season plants and work well to control cool season grasses. Burn when cool season grasses are growing and warm season plants are just beginning to grow.

Woody vegetation control becomes critical in maintaining areas in prairie. Undesirable woody vegetation may be controlled by early spring or fall burning, or cutting/girdling with spot chemical treatment to remove the plant or prevent sprouting.

Chemicals used in performing this practice must be Federally, State, and locally registered and must be applied in accordance with label directions.

Criteria for Oak Savanna Restoration

Prior to European settlement, oak savanna was common in a long narrow diagonal zone northwest to southeast across Minnesota.

This community is characterized by widely spaced, open grown trees/shrubs and greater than 30% prairie grassland understory. The canopy cover is broken to scattered and ranges from 10% to as high as 70%.

Apply this practice to lands suited to the appropriate planned oak savanna community restoration (Mesic or Dry) as identified in Figure 1.

Restoration Design:

- 50%-75% of the site shall be established to native prairie according to the practice specifications for "Tallgrass Prairie Restoration". 25%-50% of the site shall be established to native oak trees and native shrubs.
- Planting stock for oak savanna establishment shall consist of Minnesota ecotype species: Bur Oak (*Quercus macrocarpa*), White Oak (*Quercus alba*), Black Oak (*Quercus velutina*), Swamp White Oak (*Quercus bicolor*) or Northern Pin Oak (*Quercus ellipsoidalis*) adapted to the site conditions and savanna type planned.
- Select native shrubs adapted to the site conditions. Refer to practice standard 645-Upland Wildlife Habitat Management. Predominant savanna shrub species include: Plum (*Prunus spp.*), Dogwood (*Cornus spp.*), Rose (*Rosa spp.*) and American Hazel (*Corylus americana*).
- Minnesota ecotype seedlings developed to reflect native communities and obtained through commercial vendors and determined suitable for specific site conditions may also be used.

Planting Rate:

- Trees and shrubs will be planted at a rate of 100-125 trees/shrubs per acre. On wetter sites, up to 250 trees/shrubs per acre may be planted if recommended by the MDNR Forester.
- Woody plantings shall consist of 80%-100% oaks with the balance comprising native shrubs.

Planting:

- For restorations less than 10.0 acres in size, the tree/shrub planting shall be in the form of clumps, not plantations, and shall be planted at a rate of 25 trees/shrubs per clump. Distribute the clumps throughout the project area.
- For restorations greater than 10.0 acres in size, the tree/shrub planting shall be in the form of blocks. Each block will not exceed 5.0 acres, and will be distributed throughout the project area.

Shrubs as applicable shall be randomly intermixed with the oaks.

Site Preparation and weed control:

Refer to practice standard 380-Windbreak.

Cover crop seeding mixtures shall be selected from one of the following individual species, or a 50:50 mixture each at ½ the full seeding rate:

	FULL RATE - SEEDED ALONE	
	Drilled Rate PLS lb/ac	Broadcast Rate PLS lb/ac
Blue Grama	5.0	10.0
Sideoats Grama	15.0	30.0

Planting Dates:

Planting will be done in the spring, prior to June 1.

Maintenance:

Oak savannas are plant communities that developed and are maintained by fire. General guidance for management of the understory component is as follows:

- To produce barrens understory structure of grasses without brush, utilize late spring and summer burns. Frequent "low intensity" burning techniques are necessary such as the "backfire" method on a 1-3 year interval.
- To produce scrub barrens with a sparse brush and grass understory, high intensity fires at intervals of 5 years or greater are necessary.

Avoid burning the savanna portion that contains trees and shrubs until they reach a size resistant to fire, usually a minimum of 5 years following establishment.

Criteria for Red and White Pine Restoration

Apply this practice to sites where the soils and climate are suitable for growing red pine (*Pinus resinosa*), jack pine (*Pinus banksiana*) and white pine (*Pinus strobus*).

Do not apply this practice to convert native jack pine stands to red or white pine stands. Sites will be located within the historic range as identified in figure 1.

Restoration Design:

Consult with MDNR for design recommendations.

- Each planting site shall contain a mixture of primary and secondary species as follows:
 1. Primary Species: red pine, jack pine and white pine.
 2. Secondary Species: three native hardwood tree species and one native shrub species suited to the eco-region and site conditions.
- Note: where desired, an understory native conifer may be substituted for one of the hardwood species.
- Where practical, the planting patterns should be altered to reflect the random nature of a natural forest stand. Rows of single species should be avoided.

- Retain any appropriate existing native vegetation.
- Planting stock shall consist of Minnesota ecotype red pine, jack pine and white pine, from known and documented seed sources.
- Planting stock for native hardwood trees and shrubs will be adapted to the site conditions.
- The potential for animal depredation of planted trees and shrubs should be considered, and appropriate steps taken to protector manage damage (e.g. bud caps, tree shelters etc.)

Planting Rate:

Plantings should establish 300 to 500 red and white pines per acre, up to 800 jack pines, and 100 to 300 hardwood trees and shrubs per acre.

Planting Dates:

Planting of all bare root stock will be done in the spring, as soon as site conditions allow, but prior to June 1. Planting of container stock may occur after June 1, provided soil moisture conditions are adequate.

Site Preparation and Maintenance:

Refer to practice standard 612–Tree Planting.

Criteria for Jack Pine Woodland Restoration

Consult with MN DNR for design recommendations.

Jack pine woodlands are a declining plant community that occurs in central and northern Minnesota. They typically occur on sandy soils where crown and surface fires were historically common. Their canopies are patchy to continuous (25-100% cover), dominated by jack pine with minor amounts of paper birch, red pine, quaking aspen and bur oak. Hazel and junberry are common shrubs.

Planting Rate:

Plantings should establish 100 to 400 jack pines per acre, and up to 100-300 hardwood trees and shrubs per acre.

A sparse planting of native grasses and forbs may be included in the restoration site. Consult MN DNR for appropriate species mix.

Criteria for Aspen Parkland Restoration

The tallgrass aspen parkland occupies a broad zone of gradual transition between the prairie, forest and peat lands as identified in Figure 1.

Historically, this community was characterized by a dominance of tallgrass and wet prairie, and a sub-dominance of scattered shrub thicket, bur oak and aspen groves. Floodplains were comprised of Elm and Ash.

Apply this practice to sites where the soils and climate are suitable to the appropriate habitat components.

Restoration Design:

Parkland restoration must take into consideration a number of planning issues including; landscape considerations, species selection and composition, and the effects on “at risk species”.

Therefore, it is recommended that the MN DNR be involved in the project design and restoration plan.

Prairie Component:

Follow the specifications for “tallgrass prairie” restoration. Additional wet/brush prairie species may include sedges (*Carex spp.*), willow (*Salix spp.*), bog birch (*Betula glandulifera*), and shrubby cinquefoil (*Potentilla fruticosa*).

Wetland Component:

Wetlands will be restored based on practice standard 657–Wetland Restoration.

Woodland Component:

The aspen component will be comprised primarily of trembling aspen (*Populus tremuloides*), balsam poplar (*Populus balsamifera*) and bur oak (*Quercus macrocarpa*) may be included as a secondary component.

Aspen will be established by one or a combination of the following methods:

- Natural regeneration – due to the suckering characteristic of aspen, sites with minimal disturbance may best be established through discontinuing the disturbance activity and allow passive regeneration.
- Planting – on sites where passive regeneration will not meet restoration objectives planting may be necessary.
 1. Plant materials shall consist of Minnesota ecotype species.
 2. Planting shall be in the form clumps, not plantations.
 3. Trees shall be planted at a rate of 25 trees per clump, with 100-125 trees per acre.

Additional tree and shrub species may include; American hazel (*Corylus americana*), chokecherry (*Prunus virginiana*), plum (*Prunus americana*), serviceberry (*Amelanchier spp.*), and bur oak (*Quercus macrocarpa*).

Site preparation and planting:

Follow practice standard 612–Tree Planting. The potential for animal depredation of planted trees and shrubs should be considered, and appropriate steps taken to protector manage damage (e.g. bud caps, tree shelters etc.)

Maintenance:

Management of parkland restorations are best accomplished through the introduction of controlled fire to restore the natural dynamics of the parkland.

For more information on prescribed burning see practice standard 338–Prescribed Burning. Additional guidance may be found in the tallgrass prairie and oak savanna sections of this standard.

CONSIDERATIONS

Confer with other agencies and organizations to develop guidelines and specifications for conserving declining habitats.

In many cases threatened and endangered species or species of concern will benefit from conservation of declining habitats.

Haying, grazing and tree harvest will be planned and managed as necessary to achieve and maintain the intended purpose of managing wildlife habitat.

All habitat manipulations will be planned and managed according to soil capabilities and recommendations for management will avoid excessive soil loss.

PLANS AND SPECIFICATIONS

Plans and specifications for establishment and maintenance of this practice shall be prepared for each habitat type.

Plans and specifications shall be recorded using approved specification sheets, job sheets, and narrative statements in the conservation plan or other acceptable documents.

For wetland restorations, prepare site specific plans and specifications following practice standard 657—Wetland Restoration.

For prairie, parkland and oak savanna restoration, site specific plans and specifications shall be developed based on this standard.

For red and white pine restoration, site specific plans and specifications shall be developed based on practice standard 612–Tree Planting.

OPERATION AND MAINTENANCE

A restoration project may require many years to achieve the biological diversity that approximates a native habitat. Proper management of the restored area is essential for the restoration to achieve and maintain the full potential of the site for the desired habitat type. As vegetation matures and goes through successional stages, changes in management practices including introduction of new species may be required to maintain and enhance the desired habitat type.

Follow-up habitat assessments shall be performed on a regular basis to evaluate the progress of planned activities.

REFERENCES

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Nuzzo, V. 1986. Extent and Status of Midwest Oak Savanna: Pre-settlement and 1985. *Natural Areas Journal* 6(2):6-36.

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Figure 1: Declining Habitats of Significant Extent.

