

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**UPLAND WILDLIFE HABITAT MANAGEMENT**

(acre)  
Code 645

**DEFINITION**

Creating, restoring, maintaining, or enhancing areas, for food, cover, and water for upland wildlife and species which use upland wildlife habitat for a portion of their life cycle.

**PURPOSE**

- Provide a variety of food for the desired kinds of upland wildlife species;
- Provide a variety of cover types for the desired kinds of upland wildlife species. Examples include nesting, fawning, loafing, resting, escape, travel lanes, and thermal.;
- Provide water for the desired kinds of wildlife species.
- Arrange habitat elements in proper amounts and locations to benefit desired species;
- Manage the wildlife habitat to achieve a viable wildlife population within the species home range.

**CONDITIONS WHERE PRACTICE APPLIES**

On all landscapes that are suitable for the kinds of wildlife habitat that are needed within the range of the desired species or the natural community under consideration.

**CRITERIA**

**General Criteria Applicable to all Purposes:**

Food and cover requirements for upland wildlife may be provided by habitat elements that are part of other existing or proposed management systems or landuses.

The habitat elements fulfilling the food and cover requirements for wildlife and their management must be identified in the management plan.

Development and management options will be based on either;

- (a) Target wildlife species as the primary planning objective, to achieve the minimum habitat criteria requirements of the select species of wildlife or;
- (b) Habitat diversity and quality on a planning unit where wildlife is not the primary planning objective. The Minnesota Wildlife Habitat Evaluation System (WHES) will be utilized for item (b).

When the necessary measures or criteria required in items (a) or (b) above have been established, then practice standard Upland Wildlife Habitat Management (645) will be considered to be applied for that field or farm.

**Target Species:**

See MN Biology Technical Notes species specific "Fish and Wildlife Habitat Management Guide Sheets" for habitat development suggestions, and

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the Management Considerations Section in this specification.

Assess whether the minimum habitat criteria requirements of the desired species of wildlife are met by the existing habitat and management plan.

- (a) Retain and manage existing habitat of value or develop new habitat for the desired wildlife species.
- (b) Establish or install appropriate habitat elements that are lacking through planting, construction, or other appropriate activities.
- (c) Preserve habitats of special value as food, cover, or water.

The plan must include the development, planting, or management required to maintain and/or improve the identified species habitat quality.

### **Habitat Diversity:**

The Minnesota "Wildlife Habitat Evaluation System" (WHES) will be used to evaluate, in general terms, the quality of existing wildlife habitat on a farm/planning unit, when wildlife is not the primary planning objective. WHES is useful in identifying deficient landscape features for wildlife on the farm/planning unit.

WHES will be the tool to determine when the quality criterion for animals (wildlife) is met.

- (a) The farm, field, or habitat type will be appraised using WHES. The evaluation will result in a quality rating or Habitat Suitability Index (HSI). This will consider the type, amount, and distribution of habitat elements.
- (b) If the HSI indicates a rating below the minimum of 0.4, alternatives will be recommended that will result in the necessary changes in habitat elements or their management to bring the HSI rating to 0.4 or greater.

- (c) If the HSI rating is 0.4 or greater, alternatives may be recommended that will result in the necessary management to maintain or improve the existing habitat quality. The landuser will be informed of the opportunities to raise the quality of the habitat towards the highest HSI rating of 1.0. Various combinations of criteria described under habitat elements, may be used to maintain or improve an area.

### **Habitat Elements:**

The following habitat elements will be considered when assessing wildlife habitat. Not all may apply to every habitat type.

1. Food
  - a. Type
  - b. Amount
2. Cover
  - a. Type
  - b. Amount
3. Water
  - a. quality
  - b. quantity
  - c. accessibility
  - d. seasonal availability
4. Interspersion and Distance to
  - a. crops
  - b. grasses and or legumes
  - c. shrubs
  - d. trees
  - e. water
  - f. openings
5. Migration
  - a. routes
  - b. season of use
  - c. corridors

recommended by an NRCS Biologist or other technical wildlife agency.

### **Development and Management of Wildlife Habitat:**

- As indicated by the WHES or select species requirements, certain elements may be weak or missing. Management or development of habitat to provide for or strengthen the weak or missing elements may be accomplished by the following conservation practices or measures. Criteria or guidance for installation of these practices are described in the appropriate practice standards, job sheets, etc.
- The amount and kinds of habitat elements planned, their location and management shall be identified in a management plan.
- The use of native plant materials shall be encouraged.
- Vegetative manipulations to restore plant and/or animal diversity shall be accomplished by prescribed burning or mechanical, biological or chemical methods, or a combination of the four.
- Where feasible prescribed burning shall be utilized instead of mowing.
- Livestock grazing or haying shall be conducted to maintain or improve vegetation structure and composition so as to improve the desired wildlife habitat.
- Management measures shall be provided to control invasive species and noxious weeds.
- To protect forbs and legumes that benefit native pollinators and other wildlife and provide insect food sources for grassland nesting birds, spraying or other control of noxious weeds shall be done on a “spot” basis.
- This standard does not attempt to list all possible wildlife habitat development and management practices. Others may be

### **Criteria for Establishment of Upland Habitat:**

#### **1. Permanent Herbaceous Vegetative Cover Establishment: Grasses, Legumes, Forbs.**

Native and introduced grass, legume and forb mixtures beneficial to upland wildlife are listed in Tables 1 and 2. Native plants and plant communities are encouraged since they are well-adapted to sites, less invasive, and likely to provide quality habitat without costly long term maintenance. However, due to cost, availability, and landscape position, native plants may not be feasible in all situations.

- Native Grasses: Total recommended seeding rate is 8-12 PLS lb/acre, resulting in 30-40 seeds per square foot. Total recommended forb seeding rate is 4.0-8.0 PLS oz/acre, resulting in a minimum 2-4 seeds/square foot.
- Introduced Grasses and Legumes: At least 50% of the mixture shall comprise of grasses. Mixtures may include up to 20% native grasses. All legumes shall be inoculated using innoculant specific to the legume seed.
- Establishment procedures and adapted cultivars are found in the standard and specification for Conservation Cover (327), and Agronomy Technical Note #3.
- Optimum size and height of herbaceous cover for nesting is dependent upon the species of concern. Refer to species specific requirements for individual species recommendations. In general, 20-40 acres is recommended, however, some wildlife species are area sensitive and may require larger blocks to provide suitable habitat conditions. Minimum size is 1.0 acre.
- Encourage blocks of herbaceous cover as opposed to linear plantings. Optimum width of herbaceous cover is 300'-600', with a minimum width of 100'.

- Locate to increase the interspersed of cover types, locate adjacent to existing cover and food sources.
- Protect seeding from mowing, burning, and grazing except as part of a management plan.

	1 Medium tree, 3 Shrubs
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**2. Permanent Vegetative Cover  
Establishment - Trees and Shrubs.**

The decision to establish trees and/or shrubs will be in accordance with landowner objectives, based on WHES or the target species requirements.

Planting trees and shrubs has the potential of adversely affecting non-target species. Careful consideration is to be given when planting trees and shrubs in the historic prairie region of the state. Refer to Table 3 "Native Trees and Shrubs Beneficial to Wildlife" for species recommended by ecoregion.

- Establish dense tree and shrub block or clump plantings.
- Optimal plantings are 2-5 acres in size, 10-16 rows (150-200' total width), and have a minimum 4 rows of conifers planted on the down wind side.
- A standard 10 -row block planting will consist of 2 rows of shrubs planted on the windward side of the planting. Preferably the shrubs will be planted 30-50' feet upwind of the rest of the planting to serve as a snow catch. The next 4 rows will consist of tall deciduous trees, and the inner 4 rows will consist of conifers. If space is available, expand the 10 row planting as follows:

<b>ADDITIONAL ROWS</b>	<b>TREE / SHRUB</b>
1,2	Conifer
3-5	2 Conifers, 1-3 Shrubs
6	2 Conifers,

- Woodland restoration that is intended to restore, as closely as possible natural community conditions may also be planted.
- Plantings intended for snow control as a secondary benefit along roads and highways will be located as required in practice standard Windbreak (380), and in conformance with local, county, and state regulations.
- Plantings are most effective when located adjacent to a winter food source (cropland stubble, food plot etc.), preferably the north and west sides.
- Site preparation, planting specifications, spacing, and protection shall follow practice specification Windbreak (380).

**3. Food Plots.**

A food plot is annual or perennial planting to provide food for a variety of wildlife species.

- Recommended food plot size is between 2-5 acres. Food plots will be a minimum 0.25 acre. In the absence of adequate winter cover, large block food plots (5-10 acres) may be planted to serve as both food and shelter.
- Annual plantings should be rotated, where one half of the plot is planted each year while the unplanted half grows to annual weeds.
- Snow drifting can be lessened by establishing snow traps. Harvest 12-20 rows just inside of the outer 4-6 rows on the windward side.
- If food plots are relocated or discontinued, the site will be reseeded based on this standard.
- The food plot should be adequately fertilized and weeds controlled to avoid excessive competition. The presence of some weeds such

as foxtail and ragweed benefit wildlife by providing cover and a high protein seed source.

- Food plots will be protected from livestock grazing.
- Refer to "Fish and Wildlife Habitat Management Guide Sheet - Wildlife Food Plots" for additional specifications.

### **Criteria for Management of Upland Habitat:**

#### **1. Early Successional Vegetation Management:**

Many species of wildlife prosper at some stage of plant succession less than the climax condition. To achieve this seral stage, an essential knowledge of local plant communities, their growth characteristics and species needs is required for providing effective wildlife habitat management.

Manipulation of vegetative successional stages typically occur on grassland, brushland and forestland. Manipulation may occur by one or a combination of the following methods; mechanical (mowing, shearing or disking), grazing, burning or chemical treatment. Refer to practice standard Early Successional Vegetation Management (647) for applicability and specifications.

#### **2. Forestland Improvement:**

Apply this component to provide regeneration, maintenance, or conversion of non-merchantable timber to manage forest and transition forest stands for wildlife benefits and stand diversity.

- Preserve old growth forest (at least 120 years of age), or defer timber activities to maximize wildlife values.
- Identify important food producing (nuts, berries and seeds) trees and shrubs which are shaded or bordered by less valuable trees.

- Removal of undesirable competition will provide sunlight and growing space necessary for full crown development by the target species. This ensures additional food production and increased growth.
- Preserve wildlife trees (snags). Wildlife trees left after harvest serve many wildlife functions including: foraging sites for probers and gleaners, cavities for roosting and nesting of both primary and secondary users, hunting and song perches, and shelter. The goal is to leave 7-15 live trees >6 in. dbh per acre as follows:

1-2 trees > 18" dbh/acre

2-5 trees > 12" dbh/acre

4-8 trees > 6" dbh/acre

- Management activities can be accomplished by one or a combination of the following methods; mechanical, chemical, or prescribed burning. Refer to practice standard Forest Improvement (666).

#### **3. Cropland Management:**

Many conservation practices provide high quality habitat components in cropland. Introduction of cover types and plant diversity add to increased habitat values.

Refer to Biology Technical Note #4, Minnesota Wildlife Habitat Evaluation System (WHES), for a listing of conservation practices and appropriate cropland recommendations beneficial to wildlife.

#### **4. Artificial Nesting Structures:**

Apply this component to construct nest boxes, roost poles, platforms, and other artificial structures for cavity or roost nesting species. Design, specifications and construction shall be consistent with plans included in MDNR publication "Woodworking For Wildlife: Homes

For Birds and Mammals" or other designs specified by a technical wildlife agency.

## CONSIDERATIONS

All land uses provide habitat for wildlife, but there is great variability in the quality (condition) of the land to support wildlife. A land use may provide one or more of the habitat elements necessary for a particular species during specific seasons of the year.

Manipulation of habitat may impact more than the desired kinds of wildlife. These possible effects will be evaluated and taken into consideration during the planning process. This practice will be used to promote the conservation of declining species, including threatened and endangered species.

- Habitat Diversity - The interspersing or the intermixing of the various upland wildlife habitat components, is habitat diversity. Numerous habitat types in small units provide a maximum amount of diversity or edge important for most farmland wildlife species. However, creating excessive edge could result in habitat fragmentation for some wildlife species and adversely affect them. Larger blocks of habitat are more beneficial to some native species of songbirds and other wildlife.
- Habitat Linkages - Linking fragmented habitats or cover types with corridors may greatly increase the use of an area by the species of concern. In general, the wider the corridor the more species will use it.
- Limiting Factors - Some conditions will limit population growth within the home range of a species. Remove that condition, and numbers will increase to the point where another factor becomes limiting. These conditions can be grouped into 2 categories; 1) those which can be influenced or changed such as the vegetative elements which impose limits through food supply, protection, and reproduction; and 2) those which cannot be influenced such as climate, topography, and precipitation.
- Plant Communities - Many wildlife species prosper at some stage of plant succession before climax.. Others are dependent on climax communities. Knowledge of the local plant communities, plant species successional stages, and associated animals is essential for providing accurate wildlife management assistance.
- Daily and Seasonal Ranges - Each individual animal has a home range. All the requirements for its livelihood must be found within this range. Food must be present within physical reach. Cover plants must be present and in sufficient quantity, quality, and arrangement to be useable for the species daily and seasonal needs.
- Population Management - NRCS assistance generally involves only habitat appraisal and recommendations on habitat development and management. Assistance for direct wildlife population management should be referred to the Minnesota Department of Natural Resources, Area Wildlife Manager.
- Planning Impacts - The land user should be made aware of the fact that manipulation to favor a featured species of wildlife will impact the entire animal community. The effects on non-target species may be beneficial or harmful, depending upon the nature of the prescribed management and the habitat requirements of the resident wildlife.
- Threatened and Endangered Species - Careful consideration should be given to endangered or threatened species and non-target wildlife species during the planning process.
- Water Quality - This practice can be applied to a number of different landuses, and a variety of individual practices applied. The hydrologic regime will be affected, improved or can be

degraded with respect to water quality, depending on the activities prescribed.

- Water Quantity - This practice may have little effect on the quantity of surface and ground water except for an increase in transpiration due to increased dense vegetative growth.

## PLANS AND SPECIFICATIONS

Plans and specifications for establishment and maintenance of this practice shall be prepared for each site. Plans and specifications shall be recorded using approved specification sheets, job sheets, technical notes, or narrative documentation in the conservation plan, or other acceptable documentation.

NRCS staff is encouraged to work closely with the NRCS biologist, US Fish and Wildlife Service biologist or MDNR Area Wildlife Manager in developing site specific plans and specifications. These documents are to specify the requirements for installing the practice, such as the kind, amount or quality of materials to be used, or the timing or sequence of installation activities.

## OPERATION AND MAINTENANCE

An operation and maintenance plan shall be developed that is consistent with the purposes of this practice, its intended life, and the criteria for its design.

Actions will be carried out to ensure this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation), and repair and upkeep of the practice (maintenance).

This practice will be inspected periodically and restored as needed, to maintain the stated purpose. Additional operation and maintenance requirements will be developed on a site specific basis to assure performance of the practice as intended.

## REFERENCES

1. NRCS Biology Technical Notes.
2. "Tree and Shrub Groups for Environmental and Windbreak Plantings", NRCS Field Office Technical Guide.
3. Woody Cover Plantings for Wildlife, MDNR-Section of Wildlife, 1985.
4. Establishing and Maintaining Nesting Cover for Wildlife, MDNR-Section of Wildlife, 1987.
5. Revegetating with Native Grasses, Ducks Unlimited, 1996.
6. Trees and Large Shrubs: Species Native to Minnesota's Ecological Regions. MDNR Section of Forestry, 1995.
7. Landscaping for Wildlife. MDNR-Section of Wildlife.
8. Woodworking for Wildlife, MDNR-Section of Wildlife.
9. Martin, A.C., et al., 1951. American Wildlife and Plants. McGraw-Hill. pp 500.
10. Green, J.C., 1995. Birds and Forests, A Management and Conservation Guide. MDNR, pp 182.

**Table 1: RECOMMENDED SEEDING MIXTURES FOR INTRODUCED GRASSES AND LEGUMES**

Seeding rates are listed in pounds pure live seed per acre. All seeds shall be tested by a qualified laboratory and labeled for sale in Minnesota as prescribed by the Minnesota Department of Agriculture.

Species	% of Mix	Full Seeding Rate PLS	pH Range	Wet Soils <u>1/</u>	Drought Tolerance <u>2/</u>	Flood Tolerance	Invasiveness <u>3/</u>
Smooth Bromegrass	0-50	14.0	5.5 - 7.5	No	Good	Fair	High
Orchardgrass	0-25	5.0	6.2-7.5	Yes	Fair	Fair	Low
Timothy	0-25	4.0	5.5 - 7.5	Yes	Poor	Good	Low
Intermediate Wheatgrass	0-50	20.0	6.5 - 8.5	No	Fair	Fair	Low
Tall Wheatgrass	0-50	22.0	6.5 - 8.5	Yes	Poor	Good	Low
Russian Wildrye	0-25	10.0	6.5 - 8.5	Yes	Good	Fair	Low
Western Wheatgrass <u>4/</u>	0-10	16.0	6.5 - 8.5	Yes	Good	Good	N/A
Switchgrass <u>4/</u>	0-10	5.0	5.0 - 7.5	Yes	Fair	Good	N/A
Alfalfa	0-50	12.0	6.2 - 7.5	No	Good	Poor	Low
Red Clover	0-25	9.0	5.5 - 7.5	Yes	Fair	Poor	Low
Sweetclover	0-10	7.0	6.5-8.5	No	Good	Poor	High
Alsike Clover	0-25	2.0	4.0-7.5	Yes	Poor	Good	Low

1/ Wet soils are those classified as somewhat poorly drained to poorly drained.

2/ Droughty soils are those classified as excessively drained.

3/ Refers to the potential for a species to spread into adjoining areas. **Species rated "high" should be avoided adjacent to existing native prairie or other sensitive areas.**

4/ Switchgrass and/or Western Wheatgrass may be included in introduced grass – legume mixtures.

**Example:** A dense nesting cover mixture of Alfalfa, Tall Wheatgrass, Intermediate Wheatgrass, and Sweetclover is desired.

SPECIES	% OF MIXTURE	SEEDING RATE (PLS/ACRE)	TOTAL PLS/ACRE
Alfalfa	.40 x	12.0	= 5.0
Tall Wheatgrass	.25 x	22.0	= 5.5
Intermediate Wheatgrass	.25 x	20.0	= 5.0
Sweetclover	.10 x	7.0	= 0.7
			16.2

**Table 2: RECOMMENDED SEEDING MIXTURES FOR NATIVE GRASSES, FORBS AND LEGUMES**

Seeding rates are listed in pounds pure live seed per acre. All seeds shall be tested by a qualified laboratory and labeled for sale in Minnesota as prescribed by the Minnesota Department of Agriculture.

**GRASSES:**

Species	% of Mix	Full Seeding Rate (PLS)	Seeds per Square Ft. (1 lb/ac)	pH Minimum	Wet Soils <u>1/</u>	Drought Tolerance <u>2/</u>	Flood Tolerance
Big Bluestem	10-50	8.0	3.8	>5.5	Yes	Moderate	Good
Indiangrass	10-50	8.0	4.0	>5.5	No	Moderate	Moderate
Green Needlegrass	10-30	8.0	4.0	>5.5	No	Moderate	Fair
Little Bluestem	10-30	8.0	6.0	>5.5	No	Good	Poor
Sideoats Grama	10-30	8.0	4.4	>5.5	No	Good	Poor
Prairie Sandreed	0-30	5.0	6.6	>5.5	No	Excellent	Poor
Sand Bluestem	0-30	12.0	2.6	>5.0	No	Excellent	Poor
Canada Wildrye	5-20	12.0	2.6	>5.5	Yes	Moderate	Moderate
Slender Wheatgrass	0-20	8.0	3.7	>5.0	Yes	Moderate	Moderate
Western Wheatgrass	0-20	12.0	2.6	>6.5	Yes	Good	Good
Blue Grama	0-20	2.0	17.5	>5.5	No	Excellent	Poor
Switchgrass	0-10	5.0	9.0	>5.5	Yes	Poor	Good
Canada Bluejoint	0-5	1.0	91.0	>5.5	Yes	Poor	Excellent
Prairie Cordgrass	0-5	8.0	3.8	>5.5	Yes	Fair	Excellent

1/ Wet soils are those classified as somewhat poorly drained to very poorly drained.

2/ Droughty soils are those classified as excessively drained.

**Example:** A nesting cover mixture of Big bluestem, Indiangrass, Little bluestem, Switchgrass and forbs is desired.

SPECIES	% OF MIXTURE	FULL SEEDING RATE (lb/ac)	TOTAL PLS/ACRE	SEEDS/Sq. Ft.
Big Bluestem	.40 x	8.0 lb.	= 3.2 lb.	12.2
Indiangrass	.30 x	8.0 lb.	= 2.4 lb.	9.6
Little Bluestem	.25 x	8.0 lb.	= 2.0 lb.	12.0
Switchgrass	.10 x	5.0 lb.	= 0.5 lb.	4.5
			8.1 lbs.	38.3
Purple Prairie Clover			2.0 oz.	1.8
Butterflyweed			2.0 oz.	0.2
Stiff Goldenrod			2.0 oz.	2.1
			6.0 oz.	4.1

**FORBS AND LEGUMES:**

The following list identifies native forbs and wildflowers beneficial to upland wildlife and native habitat restoration. The list is not inclusive, and identifies those species, which are readily available through private vendor seed supplies. Additional recommendations may be developed with assistance from an NRCS biologist or other technical agency.

Species		Value to Wildlife <u>1/</u>	Seeding Rate Oz/Acre	Seeds Per Square Ft <u>2/</u>
<b>DRY</b>				
<b>Dotted Blazingstar</b>	<i>(Liatris punctata)</i>	EX	2.0	0.6
<b>Silky Aster</b>	<i>(Aster sericeus)</i>	EX	1.5	0.9
<b>Purple Coneflower</b>	<i>(Echinacea angustifolia)</i>	EX	2.0	0.5
<b>Showy Penstemon</b>	<i>(Penstemon grandifloris)</i>	G	2.0	0.5
<b>Bush Clover</b>	<i>(Lespedeza capitata)</i>	G	2.0	0.5
<b>DRY to MESIC</b>				
<b>Leadplant</b>	<i>(Amorpha canescens)</i>	EX	2.0	0.8
<b>Butterfly Weed</b>	<i>(Asclepias tuberosa)</i>	EX	2.0	0.2
<b>Smooth Aster</b>	<i>(Aster laevis)</i>	EX	1.5	1.5
<b>Heath Aster</b>	<i>(Aster ericoides)</i>	EX	1.5	1.5
<b>Stiff Tickseed</b>	<i>(Coreopsis palmata)</i>	EX	2.0	0.6
<b>Showy Goldenrod</b>	<i>(Solidago speciosa)</i>	G	2.0	2.4
<b>Rough Blazingstar</b>	<i>(Liatris aspera)</i>	EX	2.0	0.6
<b>Compass Plant</b>	<i>(Silphum laciniatum)</i>	G	2.0	0.1
<b>Hoary Vervain</b>	<i>(Verbena stricta)</i>	G	2.0	1.5
<b>Prairie Smoke</b>	<i>(Geum triflorum)</i>	G	2.0	2.0
<b>MESIC to WET</b>				
<b>Rattlesnake Master</b>	<i>(Eryngium yuccifolium)</i>	EX	2.0	0.4
<b>Giant Sunflower</b>	<i>(Helianthus giganteus)</i>	EX	2.0	0.6
<b>Common Ox-eye</b>	<i>(Heliopsis helianthoides)</i>	EX	2.0	0.4
<b>Tall Blazingstar</b>	<i>(Liatris pycnostachya)</i>	EX	2.0	0.6
<b>Yellow Coneflower</b>	<i>(Ratibida pinnata)</i>	EX	3.0	1.8
<b>Golden Alexanders</b>	<i>(Zizia aurea)</i>	G	2.0	0.6
<b>Canada Tick Trefoil</b>	<i>(Desmodium canadense)</i>	G	3.0	0.3
<b>Wild Bergamot</b>	<i>(Monarda fistulosa)</i>	EX	1.5	2.5
<b>WET</b>				
<b>Swamp Milkweed</b>	<i>(Asclepias incarnata)</i>	EX	2.0	0.2
<b>Panicled Aster</b>	<i>(Aster lanceolatus)</i>	EX	1.5	1.5
<b>Boneset</b>	<i>(Eupatorium perfoliatum)</i>	EX	2.0	N/A
<b>New England Aster</b>	<i>(Aster novae-angliae)</i>	G	1.5	2.0
<b>Joe-pye Weed</b>	<i>(Eupatorium maculatum)</i>	G	1.0	2.0
<b>Blue Vervain</b>	<i>(Verbena hastata)</i>	G	2.0	2.0
<b>DRY to WET</b>				
<b>Yarrow</b>	<i>(Achillea millefolium)</i>	EX	2.0	1.9
<b>Maximillian Sunflower</b>	<i>(Helianthus maximiliani)</i>	EX	1.5	1.4
<b>Black-eyed Susan</b>	<i>(Rudbeckia hirta)</i>	EX	2.5	5.4
<b>Stiff Goldenrod</b>	<i>(Solidago rigida)</i>	EX	2.0	2.1
<b>Purple Prairie Clover</b>	<i>(Dalea purpurea)</i>	EX	2.0	1.8

1/ EX = Excellent    G = Good    2/ Seeds per square foot based on recommended seeding rate.

**Table 3: NATIVE TREES AND SHRUBS BENEFICIAL TO UPLAND WILDLIFE**

This list is not inclusive, and identifies those species generally rated good to excellent wildlife value. Additional recommendations should be developed with assistance from an NRCS biologist or other technical wildlife agency.

SPECIES		1/ TREE RATING ZONE	FOOD	COVER	NEST
<b>CONIFEROUS TREES</b>					
<b>Balsam Fir</b>	<i>(Abies balsamea)</i>	1-4	F,W	X	
<b>Black Spruce</b>	<i>(Picea mariana)</i>	1-4	F,W	X	X
<b>Eastern Redcedar</b>	<i>(Juniperus virginiana)</i>	1,2,4-6	F,W	X	X
<b>Eastern White Pine</b>	<i>(Pinus strobus)</i>	1-4,6	F,W	X	X
<b>Eastern White Cedar</b>	<i>(Thuja occidentalis)</i>	1-4	F,W	X	X
<b>Red Pine</b>	<i>(Pinus resinosa)</i>	1-3	F,W	X	X
<b>Tamarack</b>	<i>(Larix laricina)</i>	1-4		X	
<b>White Spruce</b>	<i>(Picea glauca)</i>	1-5	F,W	X	X
<b>DECIDUOUS TREES</b>					
<b>American Plum</b>	<i>(Prunus americana)</i>	1-6	S,F	X	X
<b>Bigtooth Aspen</b>	<i>(Populus grandidentata)</i>	1-6	F,W		X
<b>Bitternut Hickory</b>	<i>(Carya cordiformis)</i>	1,2,4,6	F,W	X	X
<b>Black Cherry</b>	<i>(Prunus serotina)</i>	1-6	S,F		
<b>Black Walnut</b>	<i>(Juglans nigra)</i>	1,6	F,W	X	X
<b>Bur Oak</b>	<i>(Quercus macrocarpa)</i>	1-6	F,W	X	X
<b>Butternut</b>	<i>(Juglans cinerea)</i>	1-3,6	F,W	X	X
<b>Common Chokecherry</b>	<i>(Prunus virginiana)</i>	1-6	S	X	
<b>Hackberry</b>	<i>(Celtis occidentalis)</i>	1-6	W		
<b>Hawthorn</b>	<i>(Crataegus species)</i>	1-4,6	W	X	X
<b>Mountain Ash</b>	<i>(Sorbus americana)</i>	1-4	F,W		
<b>Mountain Maple</b>	<i>(Acer spicatum)</i>	1-3	S,F		X
<b>No. Pin Oak</b>	<i>(Quercus ellipsoidalis)</i>	1-6	F,W	X	X
<b>No. Red Oak</b>	<i>(Quercus rubra)</i>	1-4,6	F,W	X	X
<b>Paper Birch</b>	<i>(Betula papyrifera)</i>	1-4,6	F,W		
<b>Pin Cherry</b>	<i>(Prunus pennsylvanica)</i>	1-6	S,F		
<b>Quaking Aspen</b>	<i>(Populus tremuloides)</i>	1-6	F,W		X
<b>Red Maple</b>	<i>(Acer rubrum)</i>	1-4,6	S,F,W	X	X
<b>Shagbark Hickory</b>	<i>(Carya ovata)</i>	1,2	F,W	X	X
<b>Sugar Maple</b>	<i>(Acer saccharum)</i>	1-6	S,F,W		X
<b>Swamp White Oak</b>	<i>(Quercus bicolor)</i>	1,2,4,6	F,W	X	X
<b>White Oak</b>	<i>(Quercus alba)</i>	1,2,4,6	F,W	X	X
<b>Yellow Birch</b>	<i>(Betula alleghaniensis)</i>	1-4,6	F,W		
<b>DECIDUOUS SHRUBS</b>					
<b>American Hazelnut</b>	<i>(Corylus americana)</i>	1-5	W	X	X
<b>Arrow-wood</b>	<i>(Viburnum dentatum)</i>	1-6	F,W	X	
<b>Chokeberry</b>	<i>(Aronia melanocarpa)</i>	1-3	W	X	

<b>False Indigo</b>	<i>(Amorpha fruticosa)</i>	1,2,4-6	F	X	
<b>Gray Dogwood</b>	<i>(Cornus racemosa)</i>	1-6	F	X	X

SPECIES		1/ TREE RATING ZONE	FOOD	COVER	NEST
DECIDUOUS SHRUBS (cont)					
<b>Highbush Cranberry</b>	<i>(Viburnum trilobum)</i>	1-6	F,W	X	
<b>Nannyberry</b>	<i>(Viburnum lentago)</i>	1-6	F,W	X	
<b>Ninebark</b>	<i>(Physocarpus opulifolius)</i>	1-3		X	
<b>Red Osier Dogwood</b>	<i>(Cornus stolonifera)</i>	1-6	F	X	X
<b>Serviceberry</b>	<i>(Amelanchier alnifolia)</i>	2-6	S	X	X
<b>Silky Dogwood</b>	<i>(Cornus amomum)</i>	1,2,6	F	X	X
<b>Silver Buffaloberry</b>	<i>(Sheperdia argentea)</i>	5,6	S	X	X
<b>Smooth Sumac</b>	<i>(Rhus glabra)</i>	1-6	W		
<b>Staghorn Sumac</b>	<i>(Rhus typhina)</i>	1-3	W		

**Food availability codes****S = Summer****F = Fall****W = winter**

1/ Refer to Forestry Technical Note #34, for trees and large shrubs native to Minnesota's Ecological Regions.