

# NYS Utility Corridor Pollinator Habitat Guidelines

## Background and Document Goals

Pollinators are integral to our food system with over one third of global food production dependent on their ecosystem services (Klein et al. 2006). Large scale loss of native wildflower habitat has dramatically decreased pollinator population in recent years, creating an immediate need for habitat restoration (Steffan-Dewenter et al. 2005). Energy utility projects such as solar electric generating systems could be suitable locations for restoration of this sun-dependent, wildflower dominated ecosystem.

New York State Department of Agriculture and Markets (hereafter referred to as the Department) offers these guidelines for the creation of native insect pollinator habitat on property developed for energy utility or other commercial enterprises. The goal of this document is to provide minimum criteria for vegetation plans on construction projects that can be considered “pollinator friendly” or to provide benefits and protection to pollinators by the Department. Project Sponsors are encouraged to restore native pollinator habitat per the following guidelines of 1) Planning and Site Preparations, 2) Seeding, Planting, & Community Establishment, and 3) Operation & Maintenance (O&M).

### 1. Planning and Site Preparations

#### a. Site Considerations

##### i. Site History

- Prior land use may affect the establishment of a pollinator habitat. Do not use locations where pre-emergent herbicides were used in the current season, as they could prevent seed germination. Additionally, areas with known soil compaction may reduce wildflower seed germination and growth and should be avoided for pollinator habitat restorations.

##### ii. Additional and Surrounding Land Uses

- Consider additional site uses and surrounding areas. Do not site pollinator habitat in locations where human health and safety could be impacted. This may include concerns ranging from traffic visibility or the potential for insect stings and bites to the public participating in nearby recreation. If the pollinator habitat site is adjacent to agricultural fields, consider planned pesticide use on the agricultural fields (see Section 1.b.).

##### iii. Existing Natural Resources

- Site pollinator habitat with enough sunlight for plant and wildflower establishment. Avoid shading as much as possible from surrounding trees and buildings.
- Do not choose locations of excessively steep slopes (>10%) or highly erodible land. While native revegetation is often suggested for erodible sites, high-quality pollinator habitat restoration is encouraged on relatively flat and accessible land. This will also support future ease of maintenance/restoration efforts.
- Avoid areas of excessive flooding and locations that pool or hold water for extended periods of time. Wetlands should generally be avoided, but sites with regularly saturated

soils are acceptable with the appropriate wet-mesic species planting (Appendix 1 - NY Pollinator Habitat Seed Mixes).

- Site soils should be capable of supporting plant growth. Visually assess the vegetative cover of the site during normal growing conditions to determine the soil's vegetative productivity. Place a one meter squared ( $m^2$ ) or 3' x 3' sampling quadrat in an area of the site that is representative of the total vegetative cover and estimate the percent area with plant cover. Multiple quadrats may be necessary to sample the area, particularly if the community cover is not consistent over the entire area.  
If the total area cover of all vegetation in the sampling quadrats consistently is less than 50%, it is likely that the soils will require amendments before supporting pollinator habitat. If this threshold is met, submit a sample of the site's soils to the Cornell Soil Health Laboratory for a Comprehensive Assessment of Soil Health (CASH) Test. Any sites with samples receiving an Overall Quality Score less than 40 are considered ineligible for pollinator habitat restoration unless the corrective measures suggested in the CASH report are implemented.
- Excessively high soil nutrients can lead to aggressive weedy plant invasion (Burns 2004). Avoid placing pollinator habitat restorations downstream of excessive nutrient and sediment stormwater loading (i.e. former barnyard runoff, areas of livestock concentration, riparian areas containing sediment deposits etc.) or in areas known to be of particularly rich nutrient soils. If high nutrient loading into the site is unavoidable, utilize aggressive invasive species management in O&M.

Stormwater runoff from nearby operations can deliver high quantities of nitrogen, phosphorus, and sediment to an area. These conditions can encourage weedy growth and should be avoided when placing pollinator habitat. Image Credit: USDA Cooperative Extension 2020; Center for TMDL and Watershed Studies 2006.



- Consider the existing weed community and pressure of the site. While evaluating the total cover for soil productivity, the predominant species of weeds in each quadrat should be noted to help determine the need for management. Particular attention should be paid to woody perennials weeds, difficult to control weeds, and invasive plants.

Sites with existing low weed pressure should take preference, however, sites of high weed and invasive species pressure may be considered with appropriate site preparation (See Section 2a – Site Preparation: Existing Vegetation Management). A site with relatively low existing weed pressure has the advantage of higher seed to soil contact and a less competition from perennial weeds. A site should be considered to have “high” weed pressure if it is visually determined that greater than 50% of the site is dominated by persistent and invasive weed species (Xerxes 2018). Species considered weedy and invasive include all those on the New York State Prohibited and Regulated Invasive Plants list (NYSDEC 2014) ([https://www.dec.ny.gov/docs/lands\\_forests\\_pdf/isprohibitedplants2.pdf](https://www.dec.ny.gov/docs/lands_forests_pdf/isprohibitedplants2.pdf)) and any others that the project sponsor deems a nuisance or problematic to pollinator habitat establishment.



### Examples of Existing Site Weed Pressure

Provided are examples of sites with existing high, medium, and low weed pressure. The bottom left of each photo shows an example of weed coverage (orange) in a typical 1-m<sup>2</sup> or 3'x3' quadrat of such a site.

Top: Example of a high weed pressure site, characterized by dense vegetation dominated by persistent and invasive weed species greater than 50% of the area as viewed from the ground; these sites require the most site preparation and vegetation management for conversion pollinator habitat.

Middle: Example of a medium weed pressure site, characterized by a low-growing, manageable weed population covering 10-49% of the area as viewed from the ground; these sites can be prepared for pollinator habitat conversion with less intensive means than high weed pressure sites.

Bottom: Example of a low weed pressure site, characterized by having less than 10% weed species cover as viewed from the ground; these sites require little to no vegetation management prior to conversion to pollinator habitat. Photo Credit: Xerxes Society, Kelly Gill 2018.

Note that a site may have low weed pressure due to an overall low soil quality preventing any vegetation from establishing. Also, sites with low existing weed pressure may still have abundant weed seeds in the seed bank that could germinate at a later point. Therefore, these visual assessments of weed pressure are considered guidance and should be balanced with appropriate site preparation and management.

## b. Surrounding Pesticide/Herbicide Use Buffers

- A 10' biannually-mowed, cool-season grass dominated buffer/access path will surround the habitat restoration, regardless of the surrounding agricultural operation or pesticide use. This buffer may be used for accessibility of people and equipment to the restoration for purposes of installation and O&M.
- Agricultural operations with no pesticide use in adjacent fields require no additional buffer than the 10' access path.
- Agricultural operations with ground applied pesticide other than neonicotinoids in adjacent fields require a 50' buffer in addition to the 10' access path. There are no vegetation requirements for this buffer area besides that it is not under active pesticide treatment (Xerxes 2016).
- Agricultural operations with ground applied neonicotinoid pesticide in adjacent fields requires a 125' buffer in addition to the 10' access path. There are no vegetation requirements for this buffer area besides that it is not under active pesticide treatment (Xerxes 2016).
- Aerial application of pesticide on adjacent fields disqualifies the site as pollinator habitat.

## 2. Seeding, Planting, and Community Establishment

### a. Site Preparation

#### i. Existing Vegetation Management

- All existing vegetation management and removal will be done in accordance with the NRCS-NY Practice standards Brush Management (314) and Herbaceous Weed Treatment (315) (Appendix 2 – NRCS-NY Conservation Practice Standards).
- All Herbicide applications will be performed by a current possessor of a NYS Pesticide Applicator License in accordance with all state and federal laws.
- Additional, non-herbicide options for weed and invasive species management may be considered (i.e. solarizing, smother crop, etc.); however, controlled burning is not allowed.

#### ii. Soil Preparation

- The site's soils will be prepared and vegetation established in accordance with the NRCS-NY Practice standard Critical Area Planting (342).
- Lightly disk or shallow till the habitat restoration to a depth of approximately 4-6" prior to seeding or planting (Missouri DNR 2000). Soil tilling can potentially unearth a dormant weed seed, which could result in a more frequent need of vegetation management and site mowing than initially predicted.
- Avoid fertilizers or other soil additives unless the site's Cornell CASH Test suggests supplementation is required for vegetative growth.

### b. Seed Mix

- The restoration will include the sowing of the NY Pollinator Habitat Seed Mixes (Appendix 1). The seed mix will be applied at a rate of 7.5-8 PLS/acre. Soils determined to be hydric by the NRCS Web Soil Survey (<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>) will receive a Wet-Mesic Mix and soils determined to be non-hydric will receive a Dry-Mesic Mix.

c. Seeding Dates

- i. Spring – Mid April-Late May; post-frost (Appendix 3 – NY State Freeze Frost Occurrence Data). Seeding in this time provides the benefit of improved or drier site conditions but runs the risk of greater weed competition.  
Fall–Late October-Early November; pre frost (Appendix 3 – NY State Freeze Frost Occurrence Data). The cold-moist stratification of seeds during this time improves germination, but site conditions can be challenging.

d. Establishment Methods

- i. Seeding – if broadcast seeding, ensure a smooth, lightly packed seed bed before application. Mix the seeds with an equal or greater volume of a slightly damp, inert carrier such as sand, vermiculite, sawdust, or rice hulls. Apply mix evenly throughout the site and press to soil with turf grass roller or cultipacker.
- ii. Hand Planting – installation of adult perennials to begin the restoration is encouraged, however, not necessary. Follow contractor or nursery recommendations for best establishment.

Regular, annual mowing of the site is required for planted species establishment and weed suppression – ensure that a mowing regimen is built into the first-year establishment plan

### 3. Operation & Maintenance (O&M)

An O&M Plan will be written and implemented for the site which is in compliance with the NRCS-NY Practice Standard Early Successional Habitat Development/Management (647) (Appendix 2 – NRCS-NY Conservation Practice Standards). Additionally, the site will meet the following requirements of diversity and community establishment:

a. Diversity Establishment

- i. The site will be monitored for two years following installation for diversity establishment. One meter squared (m<sup>2</sup>) or 3' x 3' sampling quadrats will be placed on 1% of the project area to obtain an estimate of species area cover.
  - >70% cover of planted (i.e. NRCS Pollinator Seed Mix)
  - <5% Invasive Species Cover (NYSDEC Invasive Species List)
- o \*If vegetation cover criteria are not met by the end of year two, corrective measures will be implemented, and the project will be monitored yearly until they are met.

b. Woody Species Management

- i. The O&M will specifically address woody species removal from the project area. At a minimum, the site will be mowed annually.

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## **Appendices**

Appendix 1: NY Pollinator Habitat Seed Mixes  
Appendix 2: NRCS-NY Conservation Practice Standards  
Appendix 3: NY Freeze Frost Occurrence Data

**Appendix 1: NY Pollinator Habitat Seed Mixes**

<b>NY Pollinator Seed Mix: Wet Mesic Sites</b>		
<b>Scientific Name</b>	<b>Common Name</b>	<b>% Mix (Weight)</b>
<i>Asclepias incarnata</i>	Swamp Milkweed	3.9 %
<i>Dichanthelium clandestinum</i>	Deertongue	5.9 %
<i>Doellingeria umbellata</i>	Flat Topped White Aster	1.4 %
<i>Elymus virginicus</i>	Virginia Wildrye	44.2 %
<i>Eupatorium perfoliatum</i>	Boneset	0.5 %
<i>Eutrochium maculatum</i>	Spotted Joe Pye Weed	0.3 %
<i>Helenium autumnale</i>	Common Sneezeweed	0.9 %
<i>Helianthus angustifolius</i>	Narrowleaf Sunflower	1.8 %
<i>Liatris spicata</i>	Dense Blazing Star	2.3 %
<i>Lobelia cardinalis</i>	Cardinal Flower	0.3 %
<i>Lobelia siphilitica</i>	Great Blue Lobelia	0.3 %
<i>Monarda media</i>	Purple Bergamot	1.6 %
<i>Rudbeckia hirta</i>	Blackeyed Susan	1.2 %
<i>Senna hebecarpa</i>	Wild Senna	25.9 %
<i>Solidago patula</i>	Rough Goldenrod	0.1 %
<i>Symphotrichum lateriflorum</i>	Calico Aster	0.4 %
<i>Symphotrichum novi-belgii</i>	New York Aster	1.9 %
<i>Tradescantia ohiensis</i>	Ohio Spiderwort	1.5 %
<i>Verbena hastata</i>	Blue Vervain	1.8 %
<i>Vernonia noveboracensis</i>	New York Ironweed	2.0 %
<i>Zizia aurea</i>	Golden Alexander	1.8 %

<b>NY Pollinator Seed Mix: Dry Mesic Sites</b>		
<b>Scientific Name</b>	<b>Common Name</b>	<b>% Mix (Weight)</b>
<i>Aquilegia canadensis</i>	Eastern Columbine	1.7 %
<i>Tradescantia ohiensis</i>	Ohio Spiderwort	1.4 %
<i>Penstemon digitalis</i>	Tall White Beardtongue	1.4 %
<i>Coreopsis lanceolata</i>	Lance Leaved Coreopsis	6.4 %
<i>Coreopsis tinctoria</i>	Plains Coreopsis	0.4 %
<i>Chamaecrista fasciculata</i>	Partridge Pea	4.5 %
<i>Rudbeckia hirta</i>	Blackeyed Susan	1.2 %
<i>Gaillardia aristata</i>	Perennial Blanketflower	6.2 %
<i>Asclepias syriaca</i>	Common Milkweed	4.1 %
<i>Asclepias tuberosa</i>	Butterfly Milkweed	4.1 %
<i>Monarda fistulosa</i>	Wild Bergamot	1.6 %
<i>Ratibida pinnata</i>	Gray Headed Coneflower	2.8 %
<i>Verbena stricta</i>	Hoary Vervain	2.8 %
<i>Monarda punctata</i>	Spotted Beebalm	1.2 %
<i>Heliopsis helianthoides</i>	Oxeye Sunflower	8.3 %
<i>Echinacea purpurea</i>	Purple Coneflower	12.5 %

<i>Pycnathemum tenuifolium</i>	Narrowleaf Mountainmint	0.4 %
<i>Symphotrichum prenanthoides</i>	Zigzag Aster	0.4 %
<i>Solidago speciosa</i>	Showy Goldenrod	0.9 %
<i>Symphotrichu</i>	New England Aster	0.7 %
<i>Elymus canadensis</i>	Canada Wildrye	32.5 %
<i>Dichantherium clandestinum</i>	Deertongue	4.8 %

## **Appendix 2: NRCS-NY Conservation Practice Standards**



**Natural Resources Conservation Service**  
**CONSERVATION PRACTICE STANDARD**  
**BRUSH MANAGEMENT**

**Code 314**

**(Ac)**

**DEFINITION**

The management or removal of woody (nonherbaceous or succulent) plants including those that are invasive and noxious.

**PURPOSE**

- Create the desired plant community consistent with the ecological site or a desired state within the site description.
- Restore or release desired vegetative cover to protect soils, control erosion, reduce sediment, improve water quality, or enhance hydrology.
- Maintain, modify, or enhance fish and wildlife habitat.
- Improve forage accessibility, quality, and quantity for livestock and wildlife.
- Manage fuel loads to achieve desired conditions.
- Pervasive plant species are controlled to a desired level of treatment that will ultimately contribute to creation or maintenance of an ecological site description “steady state” addressing the need for forage, wildlife habitat, and/or water quality.

**CONDITIONS WHERE PRACTICE APPLIES**

On all lands except active cropland where the removal, reduction, or manipulation of woody (nonherbaceous or succulent) plants is desired.

This practice does not apply to removal of woody vegetation by prescribed fire (use Conservation Practice Standard (CPS) Prescribed Burning (Code 338)) or removal of woody vegetation to facilitate a land-use change (use CPS Land Clearing (Code 460)).

**CRITERIA**

**General Criteria Applicable to All Purposes**

Brush management will be designed to achieve the desired plant community based on species composition, structure, density, and canopy (or foliar) cover or height.

Brush management will be applied in a manner to achieve the desired control of the target woody species and protection of desired species. This will be accomplished by mechanical, chemical, burning, or biological methods, either alone or in combination. When prescribed burning is used as a method, CPS Prescribed Burning (Code 338) will also be applied.

NRCS reviews and periodically updates conservation practice standards. To obtain the current version of this standard, contact your Natural Resources Conservation Service [State office](#) or visit the [Field Office Technical Guide](#).  
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NRCS, New York  
March, 2018

When the intent is to manage trees for silvicultural purposes, use CPS Forest Stand Improvement (Code 666).

NRCS will not develop biological or chemical treatment recommendations except for biological control utilizing grazing animals. In such cases, CPS Prescribed Grazing (Code 528) is used to ensure desired results are achieved and maintained. NRCS may provide clients with acceptable biological and/or chemical control references.

In cases where there is insufficient understory vegetation to provide a seed source to result in the desired plant community, use CPS Range Planting (Code 550) or CPS Forage and Biomass Planting (Code 512) to ensure the desired results are achieved and maintained.

Follow-up treatments may be necessary to achieve objectives.

**Additional Criteria for Creating the Desired Plant Community Consistent with the Ecological Site**

Use applicable ecological site description (ESD) state and transition models to develop specifications that are ecologically sound and defensible. Treatments must be congruent with dynamics of the ecological site(s) and keyed to state and plant community phases that have the potential and capability to support the desired plant community. If an ESD is not available, base specifications on the best approximation of the desired plant community composition, structure, and function to support resilience.

Additional treatments are planned and will be applied to achieve effective control of pervasive plant species through reapplication.

**Additional Criteria for Restoring or Releasing Desired Vegetative Cover to Protect Soils, Control Erosion, Reduce Sediment, Improve Water Quality or Enhance Hydrology**

Choose a method of control that results in the least amount of soil disturbance if soil erosion potential is high and revegetation is slow or uncertain leaving the site vulnerable to long-term exposure to soil loss.

In conjunction with other conservation practices, the number, sequence, and timing of soil-disturbing operations must be managed to maintain soil loss within acceptable levels using approved erosion prediction technology.

**Additional Criteria to Maintain, Modify or Enhance Fish and Wildlife Habitat**

Brush management will be planned and applied in a manner to meet the habitat requirements for wildlife species of concern as determined by an approved habitat evaluation procedure.

Conduct treatments during periods of the year that accommodate reproduction and other life-cycle requirements of target wildlife and pollinator species, and in accordance with specifications developed for CPS Wetland Wildlife Habitat Management (Code 644) and CPS Upland Wildlife Habitat Management (Code 645).

**Additional Criteria to Improve Forage Accessibility, Quality and Quantity for Livestock and Wildlife**

Timing and sequence of brush management must be planned in coordination with specifications developed for CPS Prescribed Grazing (Code 528).

**Additional Criteria for Control of Pervasive Plant Species to a Desired Level of Treatment That Will Ultimately Contribute to Creation or Maintenance of an Ecological Site Description “Steady State” Addressing the Need for Forage, Wildlife Habitat, and/or Water Quality.**

Additional treatments are planned and will be applied to achieve effective control of pervasive plant species through reapplication.

### **Additional Criteria to Manage Fuel Loads to Achieve Desired Conditions**

Control undesirable woody plants in a manner that creates the desired plant community, including the desired fuel load, to reduce the risk of wildfire, and facilitate the future application of prescribed fire.

### **CONSIDERATIONS**

Consider using CPS Integrated Pest Management (Code 595) in support of brush management.

Consider the appropriate time period for treatment. Some brush management activities can be effective when applied within a single year; others may require multiple years of treatment(s) to achieve desired objectives.

Consider impacts and consequences to obligate species (species dependent on the target woody species) when significant changes are planned to existing and adjacent plant communities.

Consider impacts to wildlife food supplies, space, nesting, and cover availability when planning the method and amount of brush management.

State-issued licenses may be required when using chemical pesticide treatments.

For air quality purposes, consider using chemical methods of brush management that minimize chemical drift and excessive chemical usage, and consider mechanical methods of brush management that minimize the entrainment of particulate matter.

### **PLANS AND SPECIFICATIONS**

Plans and specifications for the treatment option(s) selected by the decision maker will be recorded for each field or management unit where brush management will be applied.

Prepare brush management plans and specifications that conform to all applicable Federal, State, and local laws. These documents will contain the following data as a minimum:

1. Goals and objectives clearly stated.
2. Pretreatment cover or density of the target plant(s) and the planned post-treatment cover or density and desired efficacy.
3. Maps, drawings, and/or narratives detailing or identifying areas to be treated, pattern of treatment (if applicable), and areas that will not be disturbed.
4. A monitoring plan that identifies what should be measured (including timing and frequency) and that documents the changes in the plant community (compare with objectives) will be implemented.

### **Mechanical Treatment Methods**

Plans and specifications will include items 1 through 4, above, plus—

- Types of equipment and any modifications necessary to enable the equipment to adequately complete the job.
- Dates of treatment to best effect control.
- Operating instructions (if applicable).
- Techniques or procedures to be followed.

### **Chemical Treatment Methods**

Plans and specifications will include items 1 through 4, above, plus—

- Acceptable chemical treatment references for containment and management or control of target species.
- Evaluation and interpretation of herbicide risks associated with the selected treatment(s).
- Acceptable dates or plant growth stage at application to best effect control and reduce reinvasion.

- Any special mitigation, timing considerations or other factors (such as soil texture and organic matter content) that must be considered to ensure the safest, most effective application of the herbicide.
- Reference to product label instructions.

On organic operations, chemical treatments applied must comply with USDA's National Organic Program regulations. Landowners should consult with their certifier for product approval before purchasing and applying any treatments.

### **Biological Treatment Methods**

Plans and specifications will include items 1 through 4, above, plus—

- Acceptable biological treatment references for containment and management or control of target species.
- Kind of grazing animal to be used, if applicable.
- Timing, frequency, duration, and intensity of grazing or browsing.
- Desired degree of grazing or browsing use for effective control of target species.
- Maximum allowable degree of use on desirable nontarget species.
- Special mitigation, precautions, or requirements associated with the selected treatment(s).

## **OPERATION AND MAINTENANCE**

### **Operation**

Brush management practices must be applied using approved materials and procedures. Operations will comply with all local, State, and Federal laws and ordinances.

Success of the practice shall be determined by evaluating post-treatment regrowth of target species after sufficient time has passed to monitor the situation and gather reliable data. Length of evaluation periods will depend on the woody species being monitored, proximity of propagules (seeds, branches, and roots) to the site, transport mode of seeds (wind or animals), and methods and materials used.

The operator will develop a safety plan for individuals exposed to chemicals, including telephone numbers and addresses of emergency treatment centers and the telephone number for the nearest poison control center. The National Pesticide Information Center (NPIC) telephone number in Corvallis, Oregon, may also be given for nonemergency information: **1-800-858-7384**, Monday to Friday, 6:30 a.m. to 4:30 p.m. Pacific Time. The national Chemical Transportation Emergency Center (CHEMTRAC) telephone number is **1-800-424-9300**.

- Follow label requirements for mixing/loading setbacks from wells, intermittent streams and rivers, natural or impounded ponds and lakes, and reservoirs.
- Post signs, according to label directions and/or Federal, State, Tribal, and local laws, around fields that have been treated. Follow restricted entry intervals.
- Dispose of herbicides and herbicide containers in accordance with label directions and adhere to Federal, State, Tribal, and local regulations.
- Read and follow label directions and maintain appropriate Material Safety Data Sheets (MSDS). MSDS and pesticide labels may be accessed on the Internet at: <http://www.greenbook.net/>.
- Calibrate application equipment according to recommendations before each seasonal use and with each major chemical and site change.
- Replace worn nozzle tips, cracked hoses, and faulty gauges on spray equipment.
- Maintain records of brush/shrub control for at least 2 years. Herbicide application records shall be in accordance with USDA Agricultural Marketing Service's Pesticide Recordkeeping Program and State-specific requirements.

### **Maintenance**

Following initial application, some regrowth, resprouting, or reoccurrence of brush may be expected. Spot treatment of individual plants or areas needing retreatment should be completed as needed while woody vegetation is small and most vulnerable to desired treatment procedures.

Review and update the plan periodically in order to—

- Incorporate new integrated pest management technology.
- Respond to grazing management and complex plant population changes.
- Avoid the development of plant resistance to herbicide chemicals.

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**Natural Resources Conservation Service**  
**CONSERVATION PRACTICE STANDARD**  
**HERBACEOUS WEED TREATMENT**

**CODE 315**

**(ac)**

**DEFINITION**

The removal or control of herbaceous weeds including invasive, noxious, and prohibited plants.

**PURPOSE**

This practice is used to accomplish one or more of the following purposes:

- Enhance accessibility, quantity, and/or quality of forage and/or browse
- Restore or release native or create desired plant communities and wildlife habitats consistent with the site potential
- Protect soils and control erosion
- Reduce fine fuel loads and wildfire hazard
- Pervasive plant species are controlled to a desired level of treatment that will ultimately contribute to creation or maintenance of an ecological site description “steady state,” addressing the need for forage, wildlife habitat, and/or water quality
- Improve rangeland health

**CONDITIONS WHERE PRACTICE APPLIES**

On all lands except active cropland where removal, reduction, or manipulation of herbaceous vegetation is desired.

This practice does not apply to removal of herbaceous vegetation by prescribed fire (use Conservation Practice Standard (CPS) Prescribed Burning (Code 338) or removal of herbaceous vegetation to facilitate a land-use change (use CPS Land Clearing (Code 460)).

**CRITERIA**

**General Criteria Applicable to All Purposes**

Herbaceous weed management will be applied in a manner to achieve the desired control of the target species and protection of desired species. This will be accomplished by mechanical, chemical, or biological methods either alone or in combination.

NRCS will not develop biological or chemical treatment recommendations except for biological control utilizing grazing animals. CPS Prescribed Grazing (Code 528) is used to ensure desired results are achieved and maintained.

NRCS may provide clients with acceptable biological and/or chemical control references.

NRCS may provide clients with current acceptable references to achieve desired management objectives.

When herbicides are used, environmental hazards and site-specific application criteria listed on pesticide labels, and contained in extension service and other approved pest management references, must be followed.

Herbaceous weed treatment will include post-treatment measures as needed to achieve resource management objectives.

Livestock and people access will be controlled based on management methods applied and restrictions as listed on the chemical labels.

Manage and/or dispose of treated weed species in a manner that will prevent the spread of herbaceous weeds to new sites.

**Additional Criteria to Enhance Accessibility, Quantity, and Quality of Forage and/or Browse**

Herbaceous weed treatment will be applied in a manner to minimize negative impact to forage and/or other nontargeted plants. Timing and sequence of control shall be planned in coordination with specifications developed for CPSs Prescribed Grazing (Code 528) or Forage Harvest Management (Code 511).

**Additional Criteria to Restore or Release Native or Create Desired Plant Communities and Wildlife Habitats Consistent with the Site Potential**

Apply herbaceous weed treatment in a manner to protect the health and vigor of native or desired plant species.

Use applicable ecological site description (ESD) State and transition models or other suitable information, to develop specifications that are ecologically sound and defensible. Treatments must be congruent with dynamics of the ecological site(s) and keyed to states and plant community phases that have the potential and capability to support the desired plant community. If an ESD is not available, base specifications on the best approximation of the desired plant community composition, structure, and function.

Treatments will be conducted during periods of the year when weed species are most vulnerable and will promote restoration of the native or desired plant communities.

Apply herbaceous weed treatment in a manner that maintains or enhances important wildlife habitat requirements.

Treatments will be conducted during periods of the year that accommodate reproduction and other life cycle requirements of target wildlife and pollinator species.

Apply treatments that maintain or enhance plant community composition and structure to meet the requirements of target wildlife species.

**Additional Criteria to Protect Soils and Control Erosion**

Apply herbaceous weed treatment to minimize soil disturbance and soil erosion.

Additional treatment will be applied to protect soils and prevent erosion.

**Additional Criteria to Reduce Fine Fuel Loads and Wildfire Hazard**

Treat weed species in a manner that creates a native or desired plant community which reduces the potential for accumulating excessive fuel loads and increased wildfire hazards.

Apply treatment methods in a manner that minimize the potential for unintended impacts to air resources (e.g., smoke, chemical drift, etc.).

**Additional Criteria to Control Pervasive Plant Species to a Desired Level of Treatment**

Additional treatments are planned and will be applied to achieve effective control of pervasive plant species through reapplication.

**Additional Criteria to Improve Rangeland Health**

Apply herbaceous weed treatment in a manner to enhance the health and vigor of native or desired plant species.

Complete rangeland health assessment based on the applicable “Rangeland Health Reference Worksheet” from the appropriate ecological site description(s). Identify causes of invasion, contributing processes (i.e., disturbance, dispersal, reproduction, resource acquisition, environment, life strategies, stress, interference) and associated ecological processes that are in disrepair. Appropriate tools and strategies must be based on process-based principles.

Treatments will be conducted during periods of the year when weed species are most vulnerable and will promote restoration of the native or desired plant communities.

Design and execute a plan using adaptive management which is the feedback mechanism for adjusting, as knowledge is gained from earlier management applications.

**CONSIDERATIONS**

Consider using CPS Integrated Pest Management (Code 595) in support of herbaceous weed control and weed management. Consider soil erosion potential and difficulty of vegetation establishment when choosing a method of control that causes soil disturbance.

Consider the appropriate time period for treatment. Some herbaceous weed management activities can be effective when applied within a single year; others may require multiple years of treatment(s) to achieve desired objectives.

Consider impacts to wildlife species, in general, treatments that create a mosaic pattern may be the most desirable.

Consider impacts to wildlife food supplies, space, and cover availability when planning the method and amount of herbaceous weed management.

State-issued licenses may be required when using chemical pesticide treatments.

For air quality purposes, consider using chemical methods of herbaceous weed management that minimize chemical drift and excessive chemical usage and consider mechanical methods of herbaceous weed management that minimize the entrainment of particulate matter.

Adjacent land uses must be considered before chemicals are used.

**PLANS AND SPECIFICATIONS**

Prepare plans and specifications for each field or treatment unit according to the criteria included in this standard. At a minimum, a herbaceous weed management practice plan shall include—

1. Goals and objectives statement.
2. Plan map and soil map for the site.
3. Pretreatment cover or density of the target plant(s) and the planned post-treatment cover or density.
4. Maps, drawings, and/or narratives detailing or identifying areas to be treated, pattern of treatment (if applicable), and areas that will not be disturbed.
5. A monitoring plan that identifies what shall be measured (including timing and frequency) and the changes in the plant community (compare with objectives) that will be achieved.

**Mechanical Treatment Methods**

Plans and specifications will include items 1 through 5 above, plus the following:

- Type of equipment to use for management.
- Dates of treatment for effective management.
- Operating instructions (if applicable).
- Techniques and procedures to be followed.

**For Chemical Treatment Methods**

Plans and specifications will include items 1 through 5, above, plus the following:

- Acceptable chemical treatment references for containment and management of target species.
- Documented techniques to be used, planned dates and rates of application.
- Evaluation and interpretation of herbicide risks associated with the selected treatment(s) using WIN- PST or other approved tools.
- Any special mitigation, timing considerations or other factors (such as soil texture and organic matter content) that must be considered to ensure the safest, most effective application of the herbicide.
- Reference to product label instructions.

On organic operations, chemical treatments applied must comply with USDA's National Organic Program regulations. Landowners should consult with their certifier for product approval before purchasing and applying any treatments.

**For Biological Treatment Methods**

Plans and specifications will include items 1 through 5, above, plus the following:

- Acceptable biological treatment references for the selected biological agent used to contain and manage the target species.
- Document release date, kind, and number of agents.
- Timing, frequency, duration, and intensity of grazing or browsing.
- Desired degree of grazing or browsing use for effective management of target species.
- Maximum allowable degree of use on desirable nontarget species.
- Special mitigation, precautions, or requirements associated with the selected treatment(s)

**OPERATION AND MAINTENANCE****Operation**

Herbaceous weed management practices shall be applied using approved materials and procedures. Operations will comply with all local, State, and Federal laws and ordinances.

The operator will develop a safety plan for individuals exposed to chemicals, including telephone numbers and addresses of emergency treatment centers and the telephone number for the nearest poison control center.

The National Pesticide Information Center (NPIC) telephone number in Corvallis, Oregon, may also be given for nonemergency information: 1-800-858-7384, Monday to Friday, 6:30 a.m. to 4:30 p.m., Pacific Time. The national Chemical Transportation Emergency Center (CHEMTRAC) telephone number is: 1-800-424-9300.

- Follow label requirements for mixing/loading setbacks from wells, intermittent streams and rivers,

natural or impounded ponds and lakes, and reservoirs.

- Post signs, according to label directions and/or Federal, State, Tribal, and local laws, around fields that have been treated. Follow restricted entry intervals.
- Dispose of herbicide and herbicide containers in accordance with label directions and adhere to Federal, State, Tribal, and local regulations.
- Read and follow label directions and maintain appropriate Material Safety Data Sheets (MSDS). MSDS and herbicide labels may be accessed on the Internet at: <http://www.greenbook.net/>.
- Calibrate application equipment according to recommendations before each seasonal use and with each major chemical and site change.
- Replace worn nozzle tips, cracked hoses, and faulty gauges on spray equipment.
- Maintain records of plant management for at least 2 years. Herbicide application records shall be in accordance with USDA Agricultural Marketing Service's Pesticide Recordkeeping Program and State-specific requirements.

### **Maintenance**

Success of the practice shall be determined by evaluating regrowth or reoccurrence of target species after sufficient time has passed to monitor the situation and gather reliable data. Length of evaluation periods will depend on the herbaceous weeds species being monitored, proximity of propagules (seeds, plant materials and roots) to the site, transport mode of seeds (wind or animals) and methods and materials used.

Following initial application, some regrowth, resprouting, or reoccurrence of herbaceous weeds may be expected. Spot treatment of individual plants or areas needing retreatment should be completed as needed when weed vegetation is most vulnerable to desired treatment procedures.

Review and update the plan periodically to: incorporate new IPM technology, respond to grazing management and complex weed population changes, and avoid the development of weed resistance to herbicide chemicals.

### **REFERENCES**

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Whitson, T.D., L.C. Burrill, S.A. Dewey, D.W. Cudney, B.E. Nelson, R.D. Lee, and R. Parker. 1992. Weeds of the West. Western Society of Weed Science in cooperation with the Western United States Land Grant Universities Cooperative Extension Services and the University of Wyoming. 630pp.



## Natural Resources Conservation Service

### CONSERVATION PRACTICE STANDARD

## CONSERVATION COVER

### CODE 327

#### (ac)

#### DEFINITION

Establishing and maintaining permanent vegetative cover.

#### PURPOSE

This practice is used to accomplish one or more of the following purposes:

- Reduce sheet, rill, and wind erosion and sedimentation
- Reduce ground and surface water quality degradation by nutrients and surface water quality degradation by sediment
- Reduce emissions of particulate matter (PM), PM precursors, and greenhouse gases
- Enhance wildlife, pollinator and beneficial organism habitat

#### CONDITIONS WHERE PRACTICE APPLIES

This practice applies on all lands needing permanent herbaceous vegetative cover. This practice does not apply to plantings for forage production or to critical area plantings. This practice can be applied on a portion of the field.

#### CRITERIA

##### General Criteria Applicable to All Purposes

Select species that are adapted to the soil, ecological sites, and climatic conditions that are suitable for the planned purpose and site conditions. Periodic removal of some products such as high value trees, medicinal herbs, nuts, and fruits is permitted provided the conservation purpose is not compromised by the loss of vegetation or harvesting disturbance.

Inoculate legumes at planting time.

Choose seeding rates and planting methods that will be adequate to accomplish the planned purpose. Planting dates, planting methods and care in handling and planting of the seed or planting stock shall ensure that planted materials have an acceptable rate of survival.

Prepare the site by establishing a consistent seeding depth. Eliminate weeds that would impede the establishment and growth of selected species. Use Herbaceous Weed Treatment (315) to control weeds and competing herbaceous vegetation. Use Brush Management (314) to remove non-target brush that will impede the establishment and growth of selected species. Use Cover Crop (340) to suppress weeds, control soil erosion or improve soil organic matter during site preparation.

Base the timing and equipment selection on the site and soil conditions.

Apply nutrients as needed to ensure vegetation establishment and planned growth based on soil test. Pollinator, beneficial organism and native grass plantings generally do not require lime or fertilizer. Do not apply lime or fertilizer to pollinator, beneficial organism or native grass plantings unless a soil test indicates pH is too low for establishment and productive growth, and the appropriate NRCS specialist has been consulted.

For slow growing plant species, including native grasses and forbs, control competing vegetation during the establishment period.

#### **Additional Criteria to Reduce Sheet, Rill, and Wind Erosion and Sedimentation**

Determine and maintain the amount of plant biomass and cover needed to reduce wind and water erosion to the planned soil loss objective by using the current approved wind and/or water erosion prediction technology.

#### **Additional Criteria to Reduce Emissions of Particulate Matter (PM), PM Precursors, and Greenhouse Gases**

In perennial crop systems such as orchards, vineyards, berries and nursery stock, establish vegetation to provide full ground coverage in the alleyway during mowing and harvest operations to minimize generation of particulate matter.

#### **Additional Criteria to Enhance Wildlife, Pollinator and Beneficial Organism Habitat**

Plant a diverse mixture of grass and forb species to promote bio-diversity and meet the needs of the targeted species using approved habitat appraisal guides, evaluation tools, and appraisal worksheets for the respective state.

For pollinator and beneficial organism habitat plantings, ensure several species of flowering plants are established for each bloom period; spring, summer and fall.

For beneficial organism habitat optimal function, locate plantings where beneficial insects can access targeted crops.

Locate habitat plantings to avoid exposure from all types of pesticides and drift that could harm wildlife, pollinators, and other beneficial organisms. Use Integrated Pest Management (595) to prevent, avoid and/or mitigate potential exposure to habitat protect plantings from pesticides and drift.

Follow a NRCS NY approved reference when establishing pollinator habitat.

#### **Additional Criteria to Improve Soil Health**

To maintain or improve soil organic matter, select plants that will produce high volumes of organic material. The amount of biomass needed will be determined using the current soil conditioning index procedure.

### **CONSIDERATIONS**

This practice may be used to promote the conservation of wildlife species in general, including threatened and endangered species.

Certified seed and planting stock that is adapted to the site should be used when it is available.

On sites where annual grasses are an expected weed problem, it may be necessary to postpone nitrogen fertilizer application until the planted species are well established.

Where applicable this practice may be used to conserve and stabilize archaeological and historic sites.

Consider rotating management and maintenance activities (e.g. mow only one-fourth or one-third of the area each year) throughout the managed area to maximize spatial and temporal diversity.

Use Early Successional Habitat Development/Management (647) or Prescribed Burning (338) to manage established conservation cover and associated habitat.

Where wildlife management is an objective, the food and cover value of the planting can be enhanced by using a habitat evaluation procedure to aid in selecting plant species and by providing or managing for other habitat requirements necessary to achieve the objective. Encouraging plant species diversity and establishing plantings that result in multiple structural levels of vegetation within the conservation cover will maximize wildlife use.

To provide habitat for natural enemies of crop pests, select a mix of plant species that provide year-round habitat and food (accessible pollen or nectar) for the desired beneficial species. Consider habitat requirements of predatory and parasitic insects, spiders, insectivorous birds and bats, raptors, and terrestrial rodent predators. Consult Land Grant University Integrated Pest Management recommendations for beneficial habitat plantings to manage the target pest species.

Where practical, use native species that are appropriate for the identified resource concern and management objective. Consider trying to re-establish the native plant community for the site.

If a native cover (other than what was planted) establishes, and this cover meets the intended purpose and the landowner's objectives, the cover should be considered adequate.

During vegetation establishment, natural mulches, such as wood products or hay, can be used to conserve soil moisture, support beneficial soil life, and suppress competing vegetation. Use Mulch (484).

## **PLANS AND SPECIFICATIONS**

Prepare plans and specifications for the site to include, but are not limited to:

- recommended species,
- seeding rates and dates,
- establishment procedures,
- management actions needed to insure and adequate stand

Specifications and operation and maintenance shall be recorded using approved Implementation Requirement document.

## **OPERATION AND MAINTENANCE**

Mowing and harvest operations in a perennial crop system such as orchards, vineyards, berries, and nursery stock shall be done in a manner which minimizes the generation of particulate matter.

If wildlife habitat enhancement is a purpose, maintenance practices and activities shall not disturb cover during the reproductive period for the desired species. Exceptions should be considered for periodic burning or mowing when necessary to maintain the health of the plant community.

Control noxious weeds and other invasive species.

To benefit insect food sources for grassland nesting birds, spraying or other control of noxious weeds shall be done on a "spot" basis to protect forbs and legumes that benefit native pollinators and other wildlife.

Re-vegetate bare spots.

## **REFERENCES**

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**Natural Resources Conservation Service**  
**CONSERVATION PRACTICE STANDARD**  
**WILDLIFE HABITAT PLANTING**

**CODE 420**

**(ac)**

**DEFINITION**

Establishing wildlife habitat by planting herbaceous vegetation or shrubs.

**PURPOSE**

This practice is used to accomplish one or more of the following purposes:

- Improve degraded wildlife habitat for the target wildlife species or guild
- Establish wildlife habitat that resembles the historic, desired, and reference native plant community

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies to all lands where inadequate wildlife habitat is identified as a primary resource concern and a plant community inventory or wildlife habitat evaluation indicates a benefit in altering the current vegetative conditions (species diversity, richness, structure, and pattern) by establishing herbaceous plants or shrubs. The use of annuals that persist over the life of the practice, and annuals that serve as a nurse crop to support the establishment of the persistent vegetative species are appropriate under this conservation practice.

This practice does not apply to—

- Planting of trees. For such plantings, use NRCS Conservation Practice Standard (CPS) Tree/Shrub Establishment (Code 612).
- Wildlife plantings requiring repeated cultivation and planting. For such plantings, use CPSs Wetland Wildlife Habitat Management (Code 644), or Upland Wildlife Habitat Management (Code 645).
- Plantings requiring restoration of abiotic conditions, and plantings with the objective of restoring a rare or declining natural community. For such projects, use CPS Restoration of Rare or Declining Natural Communities (Code 643).
- Plantings with a principle goal of providing forage for livestock or other domesticated animals (e.g., domesticated elk, bison, and deer). For such plantings, use CPSs Forage and Biomass Planting (Code 512) or Range Planting (Code 550) criteria.
- Plantings where erosion control or water quality is a primary resource concern. For such plantings, use CPSs Conservation Cover (Code 327), Windbreak/Shelterbelt Establishment (Code 380), Critical Area Planting (Code 342), or Filter Strip (Code 393).
- Treatment of noxious, invasive and pervasive woody or herbaceous vegetation, when aggressive efforts are required and where success monitoring of treatment efforts is necessary. Use CPSs Brush Management (Code 314) and Herbaceous Weed Treatment (Code 315) when the resource concern is a degraded plant condition due to very difficult to control noxious or invasive species. Following application of CPS Brush Management, and as needed, CPS Herbaceous Weed

Treatment (Code 315), the application of CPS Wildlife Habitat Planting (Code 420) may be determined to be needed to fully address the habitat-limiting factors.

## CRITERIA

### General Criteria Applicable to All Purposes

Identify the target wildlife species or guild and implement all vegetative establishment measures needed to meet minimum NRCS planning criteria of "50 percent of the habitat potential for the species of concern" (USDA NRCS 2003) as identified in a State-approved habitat evaluation protocol (e.g., Wildlife Habitat Evaluation Guide). In most habitat evaluation protocols this is reflected by a score of at least 0.5.

Identify the target habitat conditions to be created with the establishment of selected plant materials. The targeted habitat conditions will include a description of plant species richness, diversity, pattern, and structure. The target conditions include species that do not require annual cultivation and annual planting.

Inventory or assess the adjacent plant communities to determine sensitivity to potential risk of introducing unwanted species (noxious, invasive, and aggressive natives) into sensitive adjacent habitats. This assessment includes risks associated with ingress and egress of people and equipment, and the introduction of new plant materials. Implement actions necessary to address identified risks.

Design wildlife plantings with respect to season of use, life history, home range, condition of adjacent habitats, and landscape context.

Evaluate the location and value of the habitat for the target species or guild, versus risks to nontarget species (e.g., predation of ground-nesting birds in linear and edge-of-field plantings, insecticide impacts on invertebrates, and potential of the new habitat to encourage use by unwanted wildlife). Adjust the species, location, or design accordingly.

Wildlife plantings can create safety concerns for humans and wildlife when such habitat is located near transportation and utility infrastructure. Locate plantings away from transportation and utility infrastructure, when safety hazards to wildlife or humans are identified.

Use only species that are noninvasive and adapted to the site.

Native flora often provide greater ecological benefits relative to introduced species. When suitable, practicable, and available use native plant materials.

Seeding rates will be calculated on a pure live seed (PLS) basis.

Plant materials will meet State quality standards.

If seeds are harvested locally from native sites, test seed for purity and germination in order to determine PLS and for weed content, including State-listed noxious weeds. Locally harvested plants (plugs or shrub seedlings) must be harvested from sites without noxious or invasive species. If such sites are not available, then choose the most appropriate commercially available seed or plant materials to meet the intended habitat requirements..

For wildlife plantings (e.g., small pollinator plantings) on native rangeland sites, the species of grass in the mix must be endemic to the site, as determined by ecological site descriptions (ESD) or other technical resources. If endemic native grass seed is not commercially available or suitable, refer to NRCS State specifications for alternatives. The percent grass in the mix will follow the State standard and specifications for this practice.

Specify the composition, rates, planting depth, and proper handling of plant materials to create target habitat conditions within the practice life span.

Implement all necessary vegetative establishment protocols such as site preparation and weed and pest control (Use CPSs Brush Management (Code 314) and Herbaceous Weed Treatment (Code 315)), planting rates, planting dates, planting methods, cold storage, legume inoculation, and plant material care. Implement post-planting management actions (e.g., mowing annual weeds during establishment) needed to maximize the success of the planting. Follow the best available local, State, or regional level technical information, such as NRCS Plant Materials Center guidelines.

Apply nutrients and other soil amendments based on a soil test and only as needed for establishment.

During the establishment period, protect plantings from identified risks such as grazing, fire, excessive weed competition, and other pests. Use CPSs Access Control (Code 472), Herbaceous Weed Treatment (Code 315) and Integrated Pest Management (Code 595) as applicable.

During the establishment period, inspect the planting site for noxious or invasive plants. Implement appropriate control efforts using CPSs Brush Management (Code 314) and Herbaceous Weed Treatment (Code 315).

### **Additional Criteria for Establishing Habitat that Resembles the Historic/Desired/Reference Native Plant Community**

Native wildlife are adapted to native flora. Most native wildlife respond favorably to creating habitat conditions that closely resemble those conditions with which the wildlife species evolved. These historic conditions (commonly referred to as desired conditions, pre-European development conditions, or reference community conditions) include different disturbance regimes. Implement the following when the wildlife habitat establishment objective is to manage for native wildlife by establishing vegetative conditions that resemble the historic habitat conditions.

- Vegetative establishment efforts shall replicate native plant species richness within the targeted successional stage, as provided by an NRCS-approved data source (e.g., ESD, Natural Heritage Program, and NRCS reference sites).
- If available, maintain the integrity of the local genotype by using source-identified plant materials or local plant materials (e.g., use of local seedbank or harvest of plant materials from local native areas).
- Establish vegetation to create the targeted mosaic pattern (uniform, random, or clumped distribution).
- Following planting, utilize supporting conservation practices necessary to restore or mimic the natural disturbance regime identified and necessary to reach target conditions.

### **CONSIDERATIONS**

Many grassland habitats historically lacked a woody component. Adding shrubs into these habitats can be detrimental to many native wildlife species.

Meeting the target conditions of a seral or late successional plant community on disturbed sites may require a staged approach to establishment of the target plant community. For example, a disturbed site may require 1–2 years of plantings of annuals or crops using standards CPSs Upland Wildlife Habitat Management (Code 645), Conservation Crop Rotation (Code 328), or Cover Crop (Code 340) to build soil organic matter and control noxious grasses.

On native rangeland and native grassland, use of other standards (such as CPSs Prescribed Grazing (Code 528) and Prescribed Burning (Code 338)) may provide the same habitat functions and values necessary for the identified target species or guild but with less site disturbance and with less risk of introducing invasive species.

After the site and soils are suitable, the seral or late successional plant species are established.

Land use and habitat in the associated landscape may influence the ability to achieve wildlife population and management goals. Establish project outcome goals with consideration of adjacent habitats.

If the site was recently used for cropland, hayland, or pastureland, test soils on the establishment site and also on a site with similar soils that have not been fertilized in the past 10 years. If the nitrogen level exceeds natural levels by more than 25 percent, implement nitrogen sequestration techniques, such as planting noninvasive annual grasses (sorghum) and harvesting as hay.

Residual pesticides, herbicides, and nutrients from previous land uses can negatively affect the soil microbiology and establishment success. Plant scavenging cover crops (CPS Cover Crop – Code 340) or relocate planting, as appropriate.

Plantings immediately adjacent to lands treated with pesticides provide risks to invertebrates. Use NRCS CPS Integrated Pest Management (Code 595), technical notes and other resources to implement techniques to mitigate for pesticide risks.

Production agriculture, urban development, and energy development can reduce the availability and quality of habitat to resident and migratory wildlife. Increasing the quality of habitat to levels in excess of the minimum NRCS planning criteria threshold of 50 percent (USDA NRCS 2003) of the habitat potential can maximize local wildlife populations and help offset habitat losses in the surrounding agricultural landscape.

## **PLANS AND SPECIFICATIONS**

Develop plans and specifications for each treatment unit according to the criteria. Include in the plan, a detailed implementation schedule with success criteria that covers the entire practice life-span.

The plan will—

- Include the target wildlife species or guild.
- Describe the important target biotic conditions such as species composition, age, structure, or density.
- Document baseline conditions and planned conditions using an approved wildlife habitat evaluation procedure.
- Identify control treatments for noxious, invasive, undesirable, and competing plant and animal species necessary to restore the site to the target conditions.
- As applicable, describe actions necessary to minimize impacts to nontarget wildlife species.
- Include a practice implementation schedule. The schedule will include activities and dates critical to practice implementation and all supporting standards (e.g., CPSs Herbaceous Weed Treatment (Code 315), Brush Management (Code 314), Fence (Code 382), and Stream Crossing (Code 578)).
- Describe site/seedbed preparation methods.
- Provide fertilizer application methods and rates (if applicable).
- Provide planting methods and rates.
- Provide for supplemental water (if applicable).
- Provide for protection of plantings (if applicable).
- Provide a success criteria (target conditions) for the planting, including the target conditions and timeframes.

## **OPERATION AND MAINTENANCE**

An operation and maintenance (O&M) plan will include all activities required to maintain the improved habitat conditions, including—

- Postestablishment assessment process.

- O&M schedule with consideration for adaptive management in the O&M plan.
- Identifying periods of the day and season to avoid disturbance with O&M activities.

## **REFERENCES**

USDA NRCS. 2003. National Biology Manual, Section 511.04 (c), Resource management systems and quality criteria.



**Natural Resources Conservation Service**  
**CONSERVATION PRACTICE STANDARD**  
**EARLY SUCCESSIONAL HABITAT DEVELOPMENT/ MANAGEMENT**

**CODE 647**

**(ac)**

**DEFINITION**

Manage plant succession to develop and maintain early successional habitat to benefit desired wildlife and/or natural communities.

**PURPOSE**

This practice is used to accomplish the following purpose:

- To provide habitat for species requiring early successional habitat for all or part of their life cycle

**CONDITIONS WHERE PRACTICE APPLIES**

On all lands that are suitable for the kinds of desired wildlife and plant species.

**CRITERIA**

**General Criteria Applicable to All Purposes**

Management will be designed to achieve the desired plant community structure (e.g., density, vertical and horizontal cover) and plant species diversity.

Where planting is needed, regionally adapted plant materials will be used.

Site preparation, planting dates, and planting methods shall optimize survival.

Planting of noxious weeds and invasive species is prohibited.

Measures must be provided to control noxious weeds and invasive species.

If using chemical methods of control, Pesticide Screening Tool (WinPST) shall be used to assess risks, and appropriate mitigation to reduce known risks shall be employed.

To benefit insect food sources for grassland nesting birds, spraying or other control of noxious weeds will be in a targeted manner through the use of spot spraying, mechanical or hand wick applicators, or other approved methods to protect grasses, forbs and legumes that benefit native pollinators and other wildlife.

Management will be timed to minimize negative impacts to wildlife. Disturbance to habitat shall be restricted during critical periods (e.g., wildlife nesting, brood rearing, fawning or calving seasons).

Minimize soil disturbance in natural communities where soil integrity is essential, on steep slopes, on highly erodible soil, and where establishment of invasive species is likely.

When grazing is used as a management tool, a prescribed grazing plan developed to specifically meet the intent and objective(s) of this practice standard is required.

NRCS reviews and periodically updates conservation practice standards. To obtain the current version of this standard, contact your Natural Resources Conservation Service State office or visit the Field Office Technical Guide online by going to the NRCS website at <https://www.nrcs.usda.gov/> and type FOTG in the search field.

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NRCS, NY  
May 2011

## CONSIDERATIONS

### General Considerations

Vegetative manipulation to maximize plant and animal diversity can be accomplished by disturbance practices that include, but are not limited to: selected herbicide techniques, brush management prescribed burning, light disking, mowing, prescribed grazing, or a combination of these.

This practice should be applied periodically to maintain the desired early successional plant community and rotated throughout the managed area.

When selecting plants and designing management for this practice, consider the needs of pollinators and incorporate to the maximum extent practicable.

Wildlife habitat purposes often require lighter seeding rates than specified to prevent soil erosion.

Design and install the treatment layout to facilitate:

- Operation of machinery, and
- Use of natural firebreaks or development and maintenance of bare soil firebreaks when Prescribed Burning.

When Prescribed Grazing, consider setting aside a paddock near the center of the pasture and defer grazing until after the critical nest and brood rearing period. Many grassland birds require more than 40 days to fledge their young.

When selecting plants and designing management for this practice, consider the needs of pollinators and incorporate to the maximum extent practicable.

## PLANS AND SPECIFICATIONS

Written specifications, application schedules and maps shall be prepared for each site. Specifications shall identify the amounts and kinds of habitat elements, locations and management actions necessary to achieve management objectives.

Specifications shall be transmitted to clients using approved specification sheets, job sheets, and customized practice narratives or by other written documentation approved by NRCS.

## OPERATION AND MAINTENANCE

The following actions shall be carried out to insure that 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).

Occasional disturbance may be incorporated into the management plan to ensure the intended purpose of this practice.

Any use of fertilizers, pesticides and other chemicals shall not compromise the intended purpose.

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National Sustainable Agriculture Information Service for information on native bees in agricultural settings, <http://www.attra.ncat.org>.

Xerces Society for Invertebrate Conservation has information on Pollinator habitat, <http://www.xerces.org>.

## **Appendix 3: NY State Freeze Frost Occurrence Data**

# Freeze / Frost Occurrence Data

ALL probabilities in whole percent. See notes for probability level description.

- Indicates the probability of occurrence of threshold temperature is less than indicated probability.

State And Station Name	Threshold (F)	Spring (Date)			Fall (Date)			Freeze Free Period (Days)			Probability Level (4)
		Probability Level (1)			Probability Level (2)			Probability Level (3)			
		90	50	10	10	50	90	10	50	90	
New York											
ADDISON	36 32 28	May07 Apr30 Apr17	May31 May18 May02	Jun24 Jun04 May17	Sep04 Sep16 Sep30	Sep18 Sep30 Oct16	Oct03 Oct15 Nov01	140 157 185	110 135 166	79 113 147	53 46 37
ALBANY INTL AP	36 32 28	May01 Apr19 Apr07	May17 May02 Apr19	Jun01 May15 May01	Sep11 Sep23 Oct02	Sep22 Oct03 Oct18	Oct04 Oct13 Nov03	145 168 201	128 153 181	112 139 161	47 40 31
ALBION 2 NE	36 32 28	May02 Apr22 Apr08	May17 May02 Apr20	Jun02 May11 May01	Sep20 Sep27 Oct14	Oct01 Oct12 Oct29	Oct13 Oct26 Nov14	155 181 214	136 163 192	117 144 170	45 37 28
ALCOVE DAM	36 32 28	May08 Apr25 Apr16	May27 May12 Apr28	Jun14 May28 May11	Aug29 Sep10 Sep27	Sep16 Sep27 Oct11	Oct03 Oct14 Oct25	139 165 183	111 137 165	83 109 147	52 45 36
ALFRED	36 32 28	May21 May08 Apr26	Jun05 May23 May10	Jun20 Jun07 May25	Aug19 Sep07 Sep16	Sep08 Sep21 Oct03	Sep28 Oct05 Oct20	120 142 168	94 121 145	69 99 122	54 46 38
ALLEGANY STATE PARK	36 32 28	May17 May06 Apr21	Jun03 May25 May08	Jun21 Jun13 May26	Aug28 Sep09 Sep29	Sep14 Sep24 Oct14	Oct01 Oct09 Oct28	126 145 180	102 122 158	77 99 135	55 48 37
ANGELICA	36 32 28	May24 May10 Apr28	Jun09 May28 May12	Jun26 Jun14 May26	Aug21 Sep10 Sep18	Sep08 Sep22 Oct06	Sep25 Oct04 Oct24	113 138 170	89 117 146	66 96 123	54 47 37
AUBURN	36 32 28	May08 Apr26 Apr11	May22 May10 Apr26	Jun04 May25 May10	Sep13 Sep21 Oct07	Sep27 Oct07 Oct23	Oct10 Oct24 Nov08	148 175 202	127 150 180	107 124 158	48 41 31
AURORA RESEARCH FARM	36 32 28	Apr30 Apr22 Apr08	May17 May02 Apr20	Jun02 May12 May01	Sep18 Sep28 Oct09	Oct01 Oct15 Oct28	Oct15 Oct31 Nov16	161 184 219	137 165 190	113 146 162	46 38 30
AVON	36 32 28	May03 Apr23 Apr12	May18 May04 Apr22	Jun01 May15 May02	Sep20 Sep27 Oct10	Sep30 Oct10 Oct25	Oct10 Oct22 Nov10	152 173 204	135 158 186	117 143 167	48 40 31
BATAVIA	36 32 28	May01 Apr21 Apr10	May17 May04 Apr19	Jun02 May17 Apr28	Sep14 Sep25 Oct11	Sep26 Oct10 Oct26	Oct08 Oct25 Nov09	151 178 208	132 159 189	112 139 171	46 38 30
BATH	36 32 28	May15 May04 Apr19	May31 May17 May02	Jun15 May30 May16	Sep01 Sep11 Sep20	Sep16 Sep27 Oct08	Sep30 Oct12 Oct25	126 152 179	107 132 157	88 111 136	54 46 36
BIG MOOSE 3 SE	36 32 28	May24 May18 Apr25	Jun13 May30 May12	Jul03 Jun11 May29	Aug09 Aug30 Sep15	Aug29 Sep16 Sep25	Sep18 Oct03 Oct05	109 131 159	76 108 135	43 85 112	63 57 46
BINGHAMTON BROOME CO AP	36 32 28	Apr28 Apr20 Apr09	May17 May01 Apr19	Jun04 May12 Apr29	Sep14 Sep24 Oct02	Sep28 Oct09 Oct21	Oct12 Oct24 Nov08	156 177 206	133 160 184	111 143 162	47 39 31

BOONVILLE 2 SSW	36 32 28	May09 Apr28 Apr17	May30 May15 Apr28	Jun21 Jun01 May08	Sep09 Sep19 Sep23	Sep20 Oct02 Oct09	Sep30 Oct14 Oct24	136 162 183	112 139 163	87 116 143	53 46 38
BRIDGEHAMPTON	36 32 28	Apr23 Apr11 Mar25	May07 Apr25 Apr07	May21 May09 Apr21	Sep29 Oct04 Oct19	Oct11 Oct19 Nov03	Oct23 Nov03 Nov19	175 201 231	156 176 210	137 152 188	38 29 21
BUFFALO NIAGARA INTL	36 32 28	Apr26 Apr12 Apr03	May09 Apr24 Apr14	May22 May06 Apr24	Sep22 Oct05 Oct19	Oct05 Oct19 Nov02	Oct18 Nov02 Nov16	167 196 221	148 177 202	129 158 182	44 35 27
CAMDEN 2 NW	36 32 28	May18 May05 Apr22	Jun06 May25 May08	Jun24 Jun14 May23	Aug25 Sep05 Sep20	Sep10 Sep25 Oct08	Sep25 Oct15 Oct26	123 155 180	95 122 153	67 90 125	54 46 37
CANANDAIGUA 3 S	36 32 28	Apr30 Apr17 Apr05	May12 Apr29 Apr17	May24 May11 Apr28	Sep24 Oct02 Oct19	Oct07 Oct17 Nov02	Oct21 Nov01 Nov16	163 191 220	148 170 198	132 149 177	44 36 28
CANTON 4 SE	36 32 28	May14 May04 Apr18	Jun03 May20 May01	Jun22 Jun05 May14	Aug22 Sep08 Sep21	Sep07 Sep22 Oct03	Sep24 Oct06 Oct16	121 145 173	96 124 155	72 103 136	53 46 38
CHAZY	36 32 28	May09 Apr28 Apr14	May25 May13 Apr26	Jun10 May29 May08	Sep03 Sep14 Sep25	Sep15 Sep28 Oct06	Sep27 Oct11 Oct17	133 155 180	112 137 163	90 119 145	51 44 36
CHERRY VALLEY 2 NNE	36 32 28	May08 Apr29 Apr14	May25 May13 Apr28	Jun11 May26 May12	Sep05 Sep17 Sep28	Sep18 Sep28 Oct11	Oct01 Oct09 Oct24	137 155 185	115 138 165	93 120 146	51 44 35
COLDEN 1 N	36 32 28	May18 May05 Apr17	Jun03 May19 May03	Jun19 Jun02 May18	Sep01 Sep15 Sep29	Sep16 Sep28 Oct15	Sep30 Oct11 Oct31	123 149 187	104 131 165	86 113 143	52 45 35
CONKLINGVILLE DAM	36 32 28	May02 Apr20 Apr10	May18 May06 Apr22	Jun04 May22 May05	Sep15 Sep26 Oct04	Sep28 Oct11 Oct22	Oct12 Oct26 Nov09	154 181 208	132 158 182	111 134 156	51 44 35
COOPERSTOWN	36 32 28	May23 May06 Apr26	Jun05 May21 May07	Jun19 Jun06 May19	Aug30 Sep14 Sep22	Sep12 Sep25 Oct05	Sep25 Oct05 Oct17	117 143 166	98 126 149	79 108 133	53 45 36
CORTLAND	36 32 28	May01 Apr17 Apr04	May16 May01 Apr17	May31 May16 Apr29	Sep15 Sep25 Oct06	Sep27 Oct11 Oct25	Oct09 Oct27 Nov13	148 183 215	133 162 191	118 141 167	48 39 31
DANNEMORA	36 32 28	May06 Apr21 Apr14	May21 May09 Apr26	Jun06 May26 May09	Sep09 Sep22 Sep29	Sep22 Oct04 Oct15	Oct05 Oct15 Nov01	140 169 193	123 147 171	106 125 150	51 44 37
DANSVILLE	36 32 28	May08 Apr26 Apr12	May24 May12 Apr26	Jun08 May28 May09	Sep10 Sep23 Oct03	Sep23 Oct06 Oct19	Oct06 Oct20 Nov04	142 167 197	122 147 176	101 126 155	48 40 31
DELHI 2 SE	36 32 28	May18 May14 Apr25	Jun11 May27 May12	Jul04 Jun09 May29	Aug23 Sep04 Sep17	Sep08 Sep22 Oct11	Sep24 Oct09 Nov03	120 139 182	89 117 151	58 95 120	56 47 38
DEPOSIT	36 32 28	May16 May03 Apr25	May31 May19 May06	Jun16 Jun03 May17	Sep02 Sep21 Sep25	Sep16 Oct02 Oct12	Sep30 Oct13 Oct28	127 151 176	107 135 158	88 119 140	51 43 34
DOBBS FERRY ARDSLEY	36 32 28	Apr13 Apr03 Mar21	Apr29 Apr18 Apr03	May14 May02 Apr17	Sep27 Oct10 Oct26	Oct12 Oct25 Nov11	Oct27 Nov08 Nov27	190 213 244	165 189 221	141 165 198	36 28 20
ELMIRA	36 32 28	May06 Apr25 Apr10	May23 May09 Apr26	Jun09 May22 May12	Sep11 Sep19 Oct02	Sep23 Oct03 Oct18	Oct05 Oct18 Nov03	141 168 199	122 147 174	103 125 149	50 42 33
FRANKLINVILLE	36 32 28	May23 May09 Apr27	Jun08 May26 May14	Jun24 Jun11 May31	Aug28 Sep07 Sep21	Sep12 Sep22 Oct07	Sep28 Oct07 Oct23	118 144 163	95 119 145	72 93 127	56 49 39

FREDONIA	36 32 28	Apr30 Apr20 Apr08	May13 May02 Apr18	May26 May14 Apr27	Sep24 Oct08 Oct18	Oct08 Oct22 Nov05	Oct21 Nov05 Nov22	168 192 222	147 172 200	127 152 178	42 34 25
GENEVA RESEARCH FARM	36 32 28	Apr29 Apr16 Apr03	May12 Apr28 Apr15	May26 May10 Apr27	Sep20 Oct01 Oct17	Oct03 Oct15 Oct31	Oct16 Oct29 Nov13	162 189 220	143 169 198	125 150 176	46 38 30
GLENS FALLS FARM	36 32 28	May08 Apr26 Apr18	May26 May13 Apr29	Jun14 May29 May11	Aug26 Sep11 Sep24	Sep13 Sep26 Oct08	Oct02 Oct12 Oct22	139 162 178	109 136 161	79 110 144	51 44 36
GLENS FALLS AP	36 32 28	May07 Apr28 Apr13	May22 May08 Apr25	Jun07 May18 May08	Sep05 Sep16 Sep24	Sep19 Sep29 Oct09	Oct03 Oct11 Oct24	140 155 185	119 143 166	97 131 146	51 44 35
GLOVERSVILLE	36 32 28	May08 Apr26 Apr14	May21 Apr08 Apr26	Jun03 May20 May07	Sep11 Sep21 Sep30	Sep22 Oct03 Oct15	Oct03 Oct15 Oct31	138 160 190	123 147 172	108 134 154	51 44 35
GOUVERNEUR 3 NW	36 32 28	May17 May04 Apr25	Jun04 May20 May06	Jun22 Jun04 May17	Aug23 Sep07 Sep20	Sep08 Sep21 Oct04	Sep25 Oct04 Oct17	122 141 167	96 123 150	69 105 133	53 45 37
GRAFTON	36 32 28	May06 Apr22 Apr12	May22 May08 Apr25	Jun06 May24 May07	Sep10 Sep16 Sep28	Sep23 Oct02 Oct14	Oct05 Oct17 Oct29	141 167 190	123 146 171	105 125 152	49 42 34
GREENPORT POWER HOUSE	36 32 28	Apr07 Mar22 Mar18	May05 Apr19 Apr02	Jun01 May17 Apr17	Oct01 Oct08 Oct23	Oct19 Oct29 Nov16	Nov05 Nov19 Dec11	205 235 258	166 193 227	128 150 196	36 28 20
HEMLOCK	36 32 28	May08 Apr29 Apr15	May25 May12 Apr27	Jun12 May25 May10	Sep01 Sep15 Oct06	Sep21 Oct04 Oct21	Oct12 Oct23 Nov05	147 168 197	118 145 176	90 121 156	48 40 32
HUDSON CORRECTIONL FAC	36 32 28	Apr28 Apr21 Apr08	May13 May03 Apr22	May28 May15 May05	Sep17 Sep25 Oct05	Sep28 Oct09 Oct23	Oct10 Oct24 Nov11	156 175 207	138 159 184	119 142 161	46 39 30
INDIAN LAKE 2 SW	36 32 28	May28 May18 May01	Jun14 Jun01 May15	Jul01 Jun15 May29	Aug16 Sep06 Sep19	Sep04 Sep17 Oct04	Sep23 Sep29 Oct18	108 126 160	81 107 141	55 88 122	60 53 44
ITHACA CORNELL UNIV	36 32 28	May14 May01 Apr18	May30 May14 Apr30	Jun15 May28 May12	Sep04 Sep18 Sep30	Sep19 Oct03 Oct15	Oct03 Oct17 Oct30	133 159 186	111 141 167	89 123 148	50 42 33
JAMESTOWN 4 ENE	36 32 28	May15 May02 Apr16	Jun05 May20 May04	Jun25 Jun07 May21	Sep03 Sep10 Sep24	Sep17 Sep30 Oct16	Sep30 Oct19 Nov06	129 161 200	103 132 165	77 103 129	53 45 36
LAKE PLACID 2 S	36 32 28	Jun04 May23 May06	Jun28 Jun07 May21	Jul22 Jun22 Jun04	Aug06 Aug30 Sep10	Aug24 Sep11 Sep25	Sep11 Sep23 Oct11	91 116 145	57 95 127	22 74 109	60 53 44
LAWRENCEVILLE 3 SW	36 32 28	May11 May01 Apr17	May30 May16 Apr29	Jun18 Jun01 May12	Aug31 Sep20 Sep28	Sep16 Oct01 Oct10	Oct02 Oct11 Oct22	134 156 181	108 136 163	82 117 145	51 44 36
LIBERTY 1 NE	36 32 28	May10 Apr28 Apr16	May28 May13 Apr29	Jun14 May27 May11	Sep04 Sep14 Sep26	Sep17 Sep28 Oct15	Sep30 Oct12 Nov02	134 157 191	111 138 168	89 118 145	53 46 36
LITTLE FALLS CITY RSVR	36 32 28	May10 Apr28 Apr14	May26 May09 Apr26	Jun11 May21 May07	Sep03 Sep13 Sep23	Sep16 Sep27 Oct10	Sep30 Oct11 Oct27	134 156 186	113 140 167	92 124 147	53 45 37
LITTLE VALLEY	36 32 28	May16 May09 Apr25	Jun02 May24 May06	Jun19 Jun08 May17	Sep01 Sep12 Sep29	Sep17 Sep28 Oct15	Oct02 Oct15 Oct31	128 142 183	106 127 161	84 112 140	54 46 36
LOWVILLE	36 32 28	May16 Apr28 Apr18	May31 May15 May04	Jun16 Jun02 May20	Aug29 Sep11 Sep20	Sep12 Sep24 Oct06	Sep27 Oct07 Oct23	127 150 177	103 131 154	79 113 132	54 45 37

MASSENA AP	36 32 28	May10 Apr22 Apr14	May23 May08 Apr25	Jun05 May24 May06	Aug30 Sep18 Sep25	Sep14 Sep28 Oct08	Sep29 Oct09 Oct20	133 161 185	113 143 165	94 124 146	52 44 37
MIDDLETOWN 2 NW	36 32 28	Apr20 Apr07 Mar29	May01 Apr17 Apr08	May12 Apr28 Apr18	Sep22 Oct03 Oct17	Oct06 Oct17 Nov03	Oct20 Nov01 Nov19	176 202 226	157 182 208	139 163 189	41 33 25
MILLBROOK	36 32 28	May06 Apr20 Apr09	May23 May09 Apr27	Jun09 May29 May14	Sep03 Sep13 Sep28	Sep17 Sep30 Oct14	Sep30 Oct16 Oct30	135 167 195	116 142 169	96 118 144	51 43 35
MINEOLA	36 32 28	Apr04 Mar25 Mar11	Apr20 Apr08 Mar26	May05 Apr23 Apr11	Oct07 Oct19 Nov04	Oct22 Nov08 Nov23	Nov07 Nov28 Dec12	209 239 267	185 213 241	160 187 215	32 23 16
MOHONK LAKE	36 32 28	Apr20 Apr13 Apr03	May02 Apr24 Apr14	May14 May04 Apr24	Sep27 Oct07 Oct26	Oct10 Oct22 Nov04	Oct23 Nov06 Nov13	179 199 219	160 180 204	140 162 189	42 35 27
MORRISVILLE 6 SW	36 32 28	May11 Apr30 Apr18	Jun02 May15 Apr30	Jun24 May30 May12	Sep02 Sep13 Sep27	Sep14 Sep26 Oct15	Sep27 Oct09 Nov01	131 156 189	104 134 167	77 112 145	52 45 36
MOUNT MORRIS 2 W	36 32 28	May02 Apr21 Apr10	May18 May04 Apr20	Jun02 May16 Apr30	Sep17 Sep27 Oct12	Sep28 Oct10 Oct25	Oct08 Oct24 Nov08	150 176 206	132 159 187	114 141 168	48 40 31
NEWCOMB	36 32 28	May24 May09 May01	Jun14 May29 May15	Jul04 Jun18 May29	Aug16 Aug30 Sep17	Sep03 Sep17 Sep30	Sep21 Oct04 Oct14	110 138 158	80 110 138	51 81 117	61 54 46
NEW YORK AVE V BROOKLYN	36 32 28	Apr01 Mar21 Mar10	Apr11 Apr01 Mar24	Apr21 Apr13 Apr07	Oct21 Nov02 Nov14	Nov05 Nov18 Nov29	Nov21 Dec03 Dec13	227 253 271	207 229 249	187 206 226	28 19 14
NEW YORK CITY CENTRAL PK	36 32 28	Apr04 Mar20 Mar11	Apr14 Apr01 Mar25	Apr24 Apr13 Apr09	Oct21 Oct29 Nov14	Nov02 Nov15 Nov28	Nov13 Dec02 Dec13	215 251 269	201 227 247	187 203 226	28 20 14
NEW YORK JFK INTL AP	36 32 28	Apr03 Mar19 Mar09	Apr11 Mar31 Mar23	Apr19 Apr11 Apr06	Oct21 Oct31 Nov13	Nov02 Nov17 Nov27	Nov13 Dec04 Dec10	216 252 267	204 230 248	191 209 228	28 20 14
NEW YORK LA GUARDIA AP	36 32 28	Mar31 Mar20 Mar09	Apr10 Apr01 Mar21	Apr20 Apr12 Apr03	Oct21 Nov06 Nov16	Nov06 Nov20 Nov30	Nov22 Dec04 Dec15	230 252 272	210 233 254	189 213 235	27 19 13
NORWICH	36 32 28	May22 May05 Apr19	Jun04 May20 May02	Jun16 Jun05 May15	Aug29 Sep12 Sep25	Sep14 Sep24 Oct11	Oct01 Oct07 Oct26	124 144 181	102 126 161	80 109 141	53 45 35
OGDENSBURG 4 NE	36 32 28	Apr28 Apr19 Apr08	May19 May03 Apr22	Jun08 May18 May07	Sep09 Sep21 Sep26	Sep24 Oct02 Oct09	Oct09 Oct14 Oct23	152 169 189	128 151 169	103 134 150	49 42 34
OLD FORGE	36 32 28	May25 May13 Apr29	Jun21 Jun07 May21	Jul19 Jul01 Jun12	Aug11 Aug28 Sep09	Aug31 Sep13 Sep26	Sep19 Sep28 Oct13	110 133 160	70 97 127	29 62 95	61 54 46
OSWEGO EAST	36 32 28	Apr29 Apr16 Apr02	May12 Apr28 Apr14	May26 May11 Apr26	Sep21 Sep30 Oct19	Oct06 Oct16 Nov02	Oct21 Oct31 Nov16	165 192 223	146 170 201	126 148 179	43 35 26
PENN YAN	36 32 28	May03 Apr23 Apr10	May16 May03 Apr22	May28 May14 May03	Sep20 Sep26 Oct15	Oct03 Oct12 Oct29	Oct16 Oct27 Nov12	159 181 210	139 161 189	120 140 168	47 39 30
PERU 2 WSW	36 32 28	May10 Apr29 Apr18	May26 May12 Apr29	Jun11 May25 May09	Sep08 Sep21 Sep27	Sep20 Oct01 Oct09	Oct02 Oct11 Oct21	137 159 178	116 141 162	95 124 146	51 44 35
PORT JERVIS	36 32 28	May01 Apr22 Apr10	May15 May05 Apr21	May28 May18 May02	Sep17 Sep27 Oct05	Sep27 Oct09 Oct20	Oct07 Oct21 Nov04	151 172 203	135 157 182	119 141 160	45 38 29

POUGHKEEPSIE	36 32 28	May01 Apr21 Apr06	May14 May03 Apr16	May28 May14 Apr27	Sep15 Sep24 Oct05	Sep25 Oct09 Oct20	Oct06 Oct24 Nov04	150 182 202	133 159 186	116 135 169	47 40 31
RAY BROOK	36 32 28	May29 May15 May01	Jun19 Jun01 May15	Jul10 Jun18 May29	Aug13 Sep02 Sep12	Aug29 Sep14 Sep27	Sep14 Sep25 Oct13	97 125 152	71 104 134	44 83 117	60 53 44
RIVERHEAD RESEARCH FARM	36 32 28	Apr13 Mar29 Mar17	Apr26 Apr13 Mar30	May08 Apr28 Apr12	Oct07 Oct18 Nov06	Oct19 Nov01 Nov19	Oct31 Nov14 Dec03	194 220 251	176 201 233	157 181 216	34 26 17
ROCHESTER MONROE CO AP	36 32 28	Apr30 Apr16 Apr06	May14 Apr29 Apr17	May28 May12 Apr29	Sep20 Sep29 Oct19	Oct02 Oct13 Nov01	Oct14 Oct27 Nov13	160 185 216	140 166 197	120 147 178	45 37 28
SARATOGA SPRINGS 4 SW	36 32 28	May10 Apr27 Apr17	May25 May08 Apr27	Jun08 May20 May08	Sep08 Sep16 Sep23	Sep19 Sep28 Oct08	Sep30 Oct10 Oct22	135 157 179	117 142 163	98 127 146	50 43 34
SETAUKET STRONG	36 32 28	Apr16 Mar29 Mar17	Apr27 Apr14 Mar30	May07 May01 Apr12	Sep15 Oct09 Oct27	Oct07 Oct27 Nov04	Oct28 Nov15 Nov12	185 218 233	162 195 219	140 173 204	41 34 27
SODUS CENTER	36 32 28	May04 Apr22 Apr07	May20 May03 Apr17	Jun05 May14 Apr27	Sep21 Sep26 Oct10	Sep30 Oct12 Oct24	Oct10 Oct28 Nov06	151 183 207	133 161 189	115 139 170	45 36 28
SYRACUSE HANCOCK INTL AP	36 32 28	Apr30 Apr18 Apr08	May12 Apr28 Apr18	May24 May08 Apr28	Sep17 Sep29 Oct09	Sep28 Oct13 Oct25	Oct09 Oct28 Nov09	156 188 209	138 168 189	121 148 169	45 37 28
TULLY HEIBERG FOREST	36 32 28	May12 May02 Apr21	May30 May18 May04	Jun17 Jun03 May17	Sep03 Sep16 Sep26	Sep18 Oct01 Oct12	Oct02 Oct15 Oct28	131 158 184	110 135 160	89 112 137	52 45 37
UTICA FAA AP	36 32 28	May02 Apr19 Apr09	May16 May03 Apr19	May30 May17 Apr28	Sep15 Sep24 Oct03	Sep28 Oct10 Oct20	Oct12 Oct26 Nov05	155 180 203	135 159 183	114 138 163	47 39 30
WARSAW 6 SW	36 32 28	May11 Apr29 Apr13	May26 May14 Apr27	Jun10 May29 May11	Sep03 Sep13 Oct02	Sep19 Sep29 Oct17	Oct04 Oct15 Nov02	133 162 195	115 138 172	96 113 150	52 45 36
WATERTOWN	36 32 28	May03 Apr23 Apr11	May19 May04 Apr21	Jun05 May14 Apr30	Sep16 Sep23 Oct07	Sep27 Oct05 Oct19	Oct07 Oct18 Oct31	149 169 196	130 154 181	111 139 165	48 40 33
WATERTOWN AP	36 32 28	May10 Apr27 Apr18	May28 May15 Apr30	Jun15 Jun02 May11	Aug30 Sep09 Sep21	Sep14 Sep25 Oct04	Sep30 Oct10 Oct17	130 153 176	108 132 157	87 111 137	50 42 34
WESTFIELD 2 SSE	36 32 28	Apr27 Apr12 Apr03	May09 Apr23 Apr15	May22 May03 Apr27	Oct02 Oct14 Oct28	Oct17 Oct28 Nov11	Nov01 Nov12 Nov24	179 209 229	160 188 209	140 166 188	42 34 25
WHITEHALL	36 32 28	Apr28 Apr21 Apr11	May12 May01 Apr21	May27 May11 Apr30	Sep18 Sep24 Oct06	Sep28 Oct06 Oct22	Oct08 Oct19 Nov07	154 173 203	138 157 183	123 142 164	47 40 31
YORKTOWN HEIGHTS 1 W	36 32 28	Apr19 Apr08 Mar30	May02 Apr19 Apr09	May16 Apr29 Apr18	Sep26 Oct02 Oct22	Oct09 Oct19 Nov03	Oct22 Nov04 Nov15	179 203 223	159 182 207	139 162 192	41 34 26

Notes:

- (1) Probability of later date in spring (thru Jul 31) than indicated.
- (2) Probability of earlier date in fall (beginning Aug 1) than indicated.
- (3) Probability of longer than indicated freeze free period.
- (4) Probability of Freeze/Frost in the yearly period (percent of days with temperatures at or below the threshold temperature).

# NYS Department of Agriculture and Markets - Pollinator Habitat Restoration Guideline Checklist



This checklist was developed by the New York State Department of Agriculture and Markets to provide guidance to projects wishing to develop utility or other commercial sites as pollinator friendly habitat. The Department encourages projects to address the following items in their vegetation management plans:

## 1. Planning and Site Preparation

- Site selection does not negatively affect human health or safety
- Existing conditions suggest vegetative life can be supported
- The site is not on highly erodible land or steep slopes
- The site was placed with consideration of surrounding aquatic resources, weed pressure, and stormwater nutrient loading
- Appropriate buffers from pesticide use are planned for the site
- Site preparation will be done in accordance with NRCS Standard and State and Local Law

## 2. Seeding, Planting, and Community Establishment

- NRCS NY Pollinator Mix (2017) (Wet or Dry Mesic) used in restoration
- Sites sown at 7.5-8 PLS/acre
- Seeds sown and plants installed per suppliers' instructions

## 3. Operation & Maintenance (O&M)

- Invasive species planned to be effectively managed (<5% after two years)
- Seeded species cover planned to be established (>70% after two years)
- Corrective measures are planned if the site does not meet prescribed invasive and planted species cover
- Woody species will be regularly removed, and site will be mowed annually

Project Name:

Project Sponsor/Consultant:

Project Location (Lat. , Long.):

Project Size (Acres):