

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**EARLY SUCCESSIONAL HABITAT DEVELOPMENT/MANAGEMENT**

(Ac.)

CODE 647

**DEFINITION**

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

**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**

***Most wildlife species benefit from various successional vegetative conditions other than the climax stage. To achieve the proper seral stage, it is essential to understand the daily and seasonal requirements of the targeted species prior to implementation of this practice. This may be achieved using the practice standard (645) Upland Wildlife Habitat Management or a qualified biologist.***

Management will be designed to achieve the desired plant community in density, vertical and horizontal structure, and plant species diversity.

Where planting is needed, native regionally adapted plant materials will be used whenever possible. ***No variety of tall fescue or reed canarygrass shall be planted in conjunction with this standard.***

Planting of noxious weeds and invasive species is prohibited.

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

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.

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

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

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. ***Refer to WV conservation practice standard (528) Prescribed Grazing and associated jobsheets.***

Management practices and activities should not disturb cover during the primary nesting period for grassland species. Exceptions can be allowed for light disking, selected herbicide techniques, selected mechanical removal, or mowing when necessary to maintain the health of the plant community. Mowing may be needed during the plant establishment period to control weeds and growth of woody vegetation.

**Criteria for Creation and Management of Early Successional Grass and Forb Areas (non- hayland)**

*These criteria are intended for grasslands that are not utilized as hay. For lands that are utilized for hay, refer to (511) Forage Harvest Management and the wildlife criteria outlined therein.*

*These criteria are not intended to justify a wildlife-friendly prescribed grazing plan. For lands that are utilized for pasture, refer to (528) Prescribed Grazing and associated job sheets for strategies that include wildlife as an objective.*

*Used alone or in combination with other techniques, mechanical methods can successfully manipulate vegetative succession.*

*Refer to the West Virginia Pollinator Handbook or the West Virginia Wildlife Habitat Evaluation Technique (WVWHET) handbook for specific information concerning, pollinator habitat requirements, element size, composition and distribution for various wildlife species. Apply these strategies to develop and maintain grassland habitats in non-forage producing lands forested transition areas or other similar settings. Habitats may be created or maintained by one or more of the following methods:*

***a. Mowing (non-hay producing grasslands):***

- *Mow no more than 1/3 of the entire stand in any given year. Mow in 2-4 year cycles, and where possible, mow in strips to maintain structural diversity. Rotate mowed strips across the field. Mow in strips of 35-100 feet*

*wide avoiding more narrow strips that can lead to increased predation of desirable wildlife. Each strip may have variable widths.*

- *Mow cool season grasses no shorter than 4 inches and native warm season grasses no shorter than 6 inches.*
- *Mowing/harvesting of warm season grasses should occur a minimum of 30 days prior to the first killing frost to allow for sufficient regrowth and provide habitat over winter.*

***1. Light disking***

*Used alone or in combination with other techniques, mechanical methods can successfully manipulate vegetative succession to maintain pollinator habitat or create cover for various wildlife species.*

*This practice may be utilized as a maintenance practice for retaining pollinator or terrestrial wildlife habitat or where it is feasible, to establish habitat through inter-seeding.*

*Strip disking should be used to revitalize rank stands and improve vegetative structure and density. Refer to the West Virginia Pollinator Handbook for information regarding the maintenance of existing stands and establishment of pollinator habitat.*

***a. Light Disking (wild herbaceous plants and grasslands):***

- *The ground should be disked deep enough to destroy the majority of existing vegetation (usually no more than 4 inches in depth) and provide 40% to 70% bare soil, equally distributed throughout the area of disturbance. This practice also encourages a diverse plant community of annuals and perennials.*
- *Strips should be a minimum of 25 feet in width and no more than 75 feet wide.*
- *Rotate the disked area across the field. Depending on target wildlife species and vegetative community, disking should be performed (at a minimum)*

*every 3-5 years or upon reaching 10% woody invasion.*

- *Disking depth and intensity may be varied to rejuvenate existing stems and expose more bare soil for plant germination. Plant response to disking may vary by season.*
  - *A soil test is recommended prior to implementation to determine the need for supplemental nutrients. It may be necessary to exclude livestock depending on desired effect. Refer to (590) Nutrient Management for implementation information.*
  - *Areas of undisturbed vegetation (i.e. forest riparian buffer, grass sod, filter strip, etc.) must be left adjacent to water bodies to maintain water quality. The width of this area should be a minimum of 35 feet to the closest point of the strip from the top of the streambank.*
  - *For pollinators, inter-seeding of non-native, non invasive species beneficial to pollinators is acceptable. However, this alone is usually not sufficient to establish the required diversity in pollinator enhancements. Additional planting or other complimentary practices are usually required to create pollinator enhancements.*
- 2. Chemicals**
- *Herbicides may be effectively used to manipulate succession, control noxious or exotic weeds, reduce competition and improve overall diversity. However, this method should only be utilized on a "limited" basis.*
  - *Careful planning and application are required in the use of herbicides to improve existing habitat. Selection of a product should be based on several factors including: desired effect to the vegetative community, impacts to non-target species, toxicological risks and off-site movement. If this method is chosen Win-PST Soil/Pesticide Interaction Hazard Rating(s) shall be*

*provided in compliance with NRCS policy.*

- *Chemicals are to be applied only for the uses listed on the label. All manufacturers' recommendations, precautions and directions will be followed. Consult the NRCS state staff forester or WV Division of Forestry personnel for herbicide recommendations.*
- *If openings are planned and pollinators are a primary or secondary consideration, this method of establishment shall not be utilized unless required to control noxious pests or the product is labeled as pollinator-friendly. If noxious pest control is required, utilize only spot or wick applications as necessary. Avoid powder formulated pesticides where possible.*

**Criteria for Creation and Management of Early Successional Areas in Forested Settings**

*Utilize this method to construct new openings, or maintain existing openings in forested areas where wildlife is the primary objective. This improves habitat for species which utilize and benefit from early succession woody or herbaceous vegetation within forested settings. Openings may also include log landings, skid trails, roadsides and utility rights-of-way. The planner is highly encouraged to work closely with the WV Division of Forestry personnel and the NRCS state staff forester and biologist when utilizing these types of openings.*

- *Forest openings may be constructed as: (1) herbaceous forest openings; (2) permanent food plots, or; (3) early successional woody vegetation (clear-cuts).*
- *Openings may be constructed by various means including mechanical and chemical methods.*
- *The size of openings varies with individual species requirements. However, forest openings generally*

*range from 1 to 10 acres. Careful consideration must be given to the effectiveness of openings less than one acre due to shading from the surrounding canopy. Refer to the WV WHET handbook for forest opening type, size and distribution for a given species.*

- *Isolated woodland tracts <40 acres generally do not benefit from forest openings. Conversely, caution should be exercised when proposing forest openings in woodland sites that are larger than 200 contiguous acres in size. A large opening or too many small openings may lead to habitat fragmentation for non-target interior nesting species.*
- *Openings scattered throughout the targeted species' home range can add diversity and benefit a variety of wildlife.*
- *South facing slopes are preferred for openings since these tend to receive more hours of direct sunlight per day; and remain free from snow for longer periods of time in early spring and fall.*

#### **1. Herbaceous Forest Openings**

*This type of opening contains wild herbaceous vegetation consisting primarily of forbs, annuals and some perennials. They are frequently utilized as foraging and brood habitats by a variety of wildlife due to increased macro-invertebrate populations and relatively sparse vegetation.*

**NOTE:** *Herbaceous forest openings are generally not recommended for pollinators unless it can be reasonably assured that an abundance of forbs covering the required bloom periods would become established after creation. In most instances the diversity is not sufficient to meet the needs of pollinators. Contact the State Biologist to approve these openings.*

- *Openings are constructed by removing existing vegetation, slash, stumps, rocks and debris that interfere with mowing and disking.*

- *Openings should be irregular in shape and fit the contour where possible. Vegetation may be planted, however, natural invasion from the existing seed bank is preferred.*
- *The area may be lightly disked to encourage establishment of herbaceous vegetation. The seedbank should be evaluated to determine the community that will be established.*
- *Fertilization in most instances often results in dense regrowth that can inhibit utilization of the area by wildlife and is not recommended. However, soil amendments may be applied according to soil test results or to expedite natural succession in areas of extremely low fertility. Refer to Table 1 for fertility establishment recommendations.*
- *Size of the opening is dependent upon the species and required habitat elements. Careful consideration must be given to the effectiveness of openings less than one acre due to shading from the surrounding canopy. Openings larger than 1 acre may have some shrubs or trees left to create a savannah effect*
- *Openings are maintained by mowing at least once every three years to eliminate woody invasion. Light disking should be performed at least every 2-3 years to rejuvenate growth.*

#### **2. Permanent Food Plots (grass-legume openings)**

*This practice is used to create new openings consisting of cool and/or warm season grasses and legume mixes that are necessary as grassland elements within otherwise forested areas. However, existing log landings, skid roads, etc. should also be utilized whenever possible.*

*Openings for pollinators may be created in suitable cover types utilizing this practice. Pollinator openings should be a minimum of one acre in size and consist of at least three species in each of the bloom periods as outlined in the West Virginia Pollinator*

**Handbook (nine total species). Mixes shall also contain one species of native warm season grass or sedge. Pollinator enhancement openings should be created in the same fashion and with the same considerations as other wildlife openings.**

- **Plots range from one to three acres in size. Careful consideration must be given to the effectiveness of openings less than one acre due to shading from the surrounding canopy. Site should be prepared by removing all stumps, slash and debris that interfere with planting and mowing. Plots should be irregularly shaped and fit as closely to the contour as possible.**
- **Seeding mixtures should be selected that are beneficial to the target species and adapted to site conditions. Utilize those grass-legume species recommended in the WVWHET handbook or those outlined in the West Virginia Pollinator Handbook. Refer to practice standard (342) Critical Area Planting for seedbed preparation and seeding rates. No variety of tall fescue or reed canarygrass shall be planted in conjunction with this standard.**
- **The regular application of lime is recommended. Regular fertilization often results in dense regrowth that can inhibit utilization of the area by wildlife and is not recommended. Soil amendments may be applied according to soil test results to expedite natural succession in areas of extremely low fertility.**
- **In permanent food plots where soil samples are not yet available or not feasible; an all-inclusive fertilizer recommendation (for establishment only) may be used as shown in Table 1 or as indicated in the latest version of the Penn State Agronomy Guide (<http://AgGuide.agronomy.psu.edu>)**
- **Maintain established plot by mowing as needed to retain stand vigor and remove woody invasives. Where feasible, strip mowing should be utilized to maximize diversity.**

<b>Species</b>	<b>N (lbs/ac)</b>	<b>P<sub>2</sub>O<sub>5</sub> (lbs/ac)</b>	<b>K<sub>2</sub>O (lbs/ac)</b>
<b>Cool Season Grass</b>	<b>40</b>	<b>80</b>	<b>80</b>
<b>Cool Season Grass &amp; Legume</b>	<b>30</b>	<b>90</b>	<b>90</b>
<b>Warm Season Grass</b>	Refer to WV Conservation Practice Standard (327) Conservation Cover		
<b>Pollinator Species (forbs)</b>	Refer to the WV Pollinator Handbook.		

**Table 1.** Acceptable fertilization recommendation in absence of a soil test.

### **3. Early Successional Woody Opening (clear-cut/shelterwood cut)**

**This method should be used when early successional woody vegetation is desired. These areas provide additional cover and browse for a wide variety of wildlife. Openings may be established in hardwood, as well as coniferous forest. Hardwood forest openings are more easily achieved through the use of the clearcut method; while shelterwood openings may prove more useful in coniferous settings. For both types of forest openings, refer to the WV WHET handbook and practice standard (666) Forest Stand Improvement for specific information concerning methods, size, type and distribution for individual wildlife and tree species respectively. Field borders may also be utilized to provide early successional habitat. Refer to practice standard (386) Field Border for more information.**

**These types of openings generally do not benefit pollinators and do not create the required diversity needed by most species of insects.**

#### **a. Deciduous Hardwood Settings**

- **Areas should be irregular in shape and fit the contour where feasible. Various wildlife species prefer differing shapes and sizes of openings. Size of the openings will depend on the requirements of the targeted species**

*and the site characteristics. Openings less than 1 acre in size should be evaluated closely to determine their effectiveness due to shading.*

- *Achieve this type of opening by removing all woody vegetation over 4 inches dbh or greater than 15 inches in height.*
- *Openings may be established by various mechanical or chemical methods.*
- *Slash may be left on the site or removed. Removal will provide more area for sprouting and regrowth, but the regrowth may be more susceptible to browse.*
- *On larger openings, quality hard-mast (e.g. oak, hickory, beech) and soft-mast trees (e.g. cherry, serviceberry and apple) may be retained to create a savannah effect. However, it is recommended that standing trees not be left within smaller openings, due to accessibility to predators.*

#### ***b. Coniferous Settings***

*This procedure applies to conifer stands where the majority of trees and shrubs exceed 20 feet in height; or occur as mature block or plantation stands.*

- *Create openings within coniferous stands by removing 40 – 60% of the basal area from the site. This opens the canopy to allow more sunlight to reach the forest floor and encourages the natural production of seedlings and shrubs.*
- *Mature trees of good form and good seed production should be selected for initial retention. Mature trees should be removed once seedlings have become established.*
- *Openings may be established by various mechanical or chemical methods.*

#### **CRITERIA FOR TIMBER HARVEST**

*Timber harvests can be planned to provide early successional habitat. The methods*

*described above to construct openings or maintain existing openings in forested areas, may also be utilized where timber production is an objective. The type of forest stands, their age class, and how they are arranged determines the species of wildlife that benefit. The WV Division of Forestry should be consulted to coordinate these methods with timber production.*

#### **CRITERIA FOR BRUSH PILES**

*When natural cover is limited in wildlife habitat, brush piles may be provided.*

*Brush piles may be constructed as supplemental habitat where the establishment of woody shrubby thickets is not practical; or temporary habitat until permanent shrubby vegetation may become established.*

*Disturbances to these areas such as mowing, disking or clearing of vegetation should be kept to a minimum. Where possible, allow vegetation to grow freely and avoid agricultural activities during the peak nesting season to small mammals (February to September).*

#### **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.

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
- use 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.

**Consider utilizing brush piles as nesting sites for native bees.**

**Consider alternating disked strips with standing buffer strips a minimum of 2 times the disked width across the field on the contour.**

**Consider the economic value of timber stands when planning forest openings.**

**Consider the design and installation of the treatment layout to best facilitate operation of machinery or grazing. For example, grass strips should be laid out to accommodate single or multiple full width passes by all necessary farm equipment.**

**Consider white-tailed deer browse damage on seedlings and grassland when establishing forest openings.**

**In certain settings, consider using a coppice method to achieve sprout regeneration.**

**Consider the potential effects of increased surface runoff.**

**Where applicable, consider channel and streambank stability.**

**Consider installation placement with respect to landscape aspect and slope to achieve the maximum level of diversity and regrowth.**

**Consider using combinations of openings and borders (i.e. cut-back border around a permanent food plot).**

**Consider the vegetative regrowth characteristics and surrounding species in a given area to achieve the maximum diversity and the desired seral stage.**

**Where possible, consider utilizing areas of less desirable climax species for the installation of early successional vegetation.**

**When utilizing this practice in woodland settings, consider the potential for increased songbird nest parasitism and predation.**

**Consider the potential of habitat fragmentation on larger contiguous acreage.**

**Depending on the opening type, slash, stumps and debris may be left on site, removed, windrowed, harvested or piled adjacent to openings to provide additional habitat. Refer to (384) Forest Slash Treatment for more information.**

**Sites with little slope generally have better soils, less soil erosion problems, and more planting options than steeper sites. When openings are created near drainages, a forested buffer should be maintained. Refer to conservation practice standard (391) Riparian Forest Buffer for more information.**

**Careful consideration must be given to the effectiveness of openings less than one acre due to shading from the surrounding canopy.**

Managing for early successional plant communities is beneficial if not essential for less mobile animal species. The less mobile the species, the more important it is to provide all the habitat requirements in a small area.

## **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.

**NRCS staff is encouraged to work with the NRCS biologist, NRCS forester, US Fish**

and Wildlife Service, WV Division of Natural Resources and WV Division of Forestry personnel as applicable to develop meaningful site specific management plans and specifications.

At a minimum the following will be identified (as appropriate):

- any required permits including CPA-52 or similar environmental evaluation documentation;
- Win-PST Soil/Pesticide Interaction Hazard Ratings (if applicable)

**GRASSLAND MANAGEMENT (NON-HAYLAND):**

- Purpose
- Target species (including home range)
- Size of area
- Method(s)
- Mowing dates and intensities
- Minimum grass heights after removal
- Dates for any areas remaining fallow
- If applicable, a strip mowing schedule including
  - Total number of strips
  - Strip widths
  - Rotation length
  - Schedule
- Operation and Maintenance;

**FOR WOODLAND OPENINGS:**

- Purpose
- Target species (including home range identified on plan map)
- Size of area
- Opening Type
- Site preparation (if any)
- Method of establishment
- Species to be planted including:
  - Rates
  - Method
  - Dates
  - Soil amendments
- Operation and Maintenance;

**FOR AREAS REQUIRING LIGHT DISKING:**

- Purpose
- Target species (including home range)
- Size of area
- Any pre-treatment requirements
- Total number of strips
- Widths of strips (disked/undisked)
- Disking schedule

- Disking depth
- Any additional seeding requirements including:
  - species
  - rates
  - planting dates
- Operation and Maintenance

**FOR BRUSH PILES:**

- Target species
- Number of brush piles
- Location
- Surrounding cover type
- Size
- Operation and Maintenance

**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.

***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.***

Any use of fertilizers, pesticides and other chemicals to assure early successional management shall not compromise the intended purpose. ***The site should be evaluated regularly to determine the need for nutrient application. Excessive fertilizer may create habitats too dense for utilization by target species. Thus, it is not recommended to apply fertilizer more often than once every 3-5 years after establishment.***

***At a minimum the operation and maintenance plan shall consist of the following (as applicable):***

- Successive treatments necessary to maintain the target vegetative community. For example, a mowing regime stated as mow 2 strips every year, etc.

- ***Where applicable, periodic disturbance will be incorporated into the management plan to ensure the intended purpose of this practice.***

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***\* Bold Italics indicates information added to the national standard by West Virginia NRCS.***