

**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 a habitat appraisal methodology described in practice standard (645) Upland Wildlife Habitat Management or as prescribed by a Kentucky Department of Fish and Wildlife 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.

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.

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. Management practices and activities shall not disturb cover during the primary nesting period for grassland species (May 15 – August 1). Exceptions can be allowed for periodic burning, strip 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 undesirable weeds and growth of woody vegetation.

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 conservation practice standard (528) Prescribed Grazing and associated job sheets.

### **Criteria for Creation and Management of Grass/Forb & Idle Areas (Non-Hayland)**

These criteria are intended for grasslands that are not utilized for 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.

If available, refer to the Kentucky Pollinator Handbook or the Kentucky Wildlife Habitat Evaluation Procedure for specific information concerning, habitat requirements, composition and distribution for various wildlife.

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:

#### **Mowing (non-hay producing grasslands):**

The following criteria are utilized where grassland stands are maintained by periodic/occasional mowing where maintaining wildlife habitat is the primary objective.

- Mow no more than 1/3 of an entire stand in any given year. Mow in 2-4 year cycles, and where possible, mow in strips to increase 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.

- Non-native and cool season grass species provide very little wildlife benefits as compared to native grass stands. If cool season species must be utilized mow no shorter than 4 inches and native warm season grasses no shorter than 6 inches. It is imperative to remove residue.
- Mowing/harvesting of warm season grasses should occur at a minimum of 30 days prior to the first killing frost to allow for sufficient regrowth and provide habitat over winter.

#### **Light Disking (forbs and grasslands):**

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 and maintenance of existing stands and establishment of pollinator habitat.

As general criteria:

- 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 may require multiple passes depending upon equipment.
- Strips should be a minimum of 20 feet in width and no more than 50 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 2-3 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.

- 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, 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.

### Chemical Application

- Herbicides may be effectively used to manipulate succession, control noxious or exotic weeds, reduce competition and improve overall diversity. As an example, herbicides may be applied to destroy existing cover to allow existing seed banks to establish and improve overall diversity.
- 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 KY Department of Fish and Wildlife Resources (KDFWR), UK Cooperative Extension or Kentucky Division of Forestry personnel for herbicide recommendations.
- If forest 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 the following methods 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 vegetation within forested settings. Openings may also include log landings, skid trails, roadsides and utility rights-of-way.

- Clear-cuts should be utilized when young woody vegetation such as seedlings, saplings and shrubby habitat is desired. They can be created in hardwood or coniferous stands.
- Openings scattered throughout a targeted species' home range can add diversity and benefit a variety of wildlife. The type of forest stands, their age class, and how they are arranged determines the species of wildlife that are benefitted.
- Identify and utilize any suitable existing openings. These could include reverting old fields, log landings, skid trails, roadsides and utility rights-of-way. These areas may be utilized where width might be added to create an opening (i.e. "day lighting").
- When creating clear-cuts look for areas that are relatively flat and accessible such as on benches and ridge tops.
- Sites with gentle slopes 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 always be maintained.
- Openings may be constructed by mechanical and/or chemical methods.
- The size and shape of the opening varies with the individual species requirements and site characteristics. However, forest openings should never be less than one acre and should follow the contour while being as irregular in shape as possible. As a general rule, smaller openings (< 1 ac) do not regenerate well due to shading.

- Careful consideration should be given when proposing several openings in large contiguous woodland sites or small isolated woodland sites. A single large opening or too many small openings can create habitat fragmentation.
- Avoid sites with high quality tree species that may have important economic or wildlife values; and those areas that contain noxious or invasive species. Areas that have been damaged from insects or severe weather should be considered first, as well as sites where the majority of trees present are in the sapling to pole size range (2" to 10" diameter at breast height (DBH)).
- Clearcuts should fit the contour of the slope where feasible. Various wildlife species prefer differing shapes and sizes of clear-cuts. The shape and size will depend on the requirements of the targeted species and the site characteristics.
- Unless it is a valuable food source for wildlife, woody vegetation over 4" dbh or greater than 15' in height should be removed. In most instances all trees, regardless of size, may be removed for better regeneration and to remove potential predator perches.
- Slash may be left on the site or removed. Removal will provide more area for sprouting and regrowth; but may make newly sprouted plants more susceptible to browse by deer. Slash may also be windrowed, harvested or piled adjacent to openings to provide additional habitat.
- Where possible, select sites that contain tree species which rapidly re-sprout from stumps or roots (e.g. ash, maple, etc). However, often times these species may not provide suitable food sources for wildlife once mature.

### **Cut-Back Borders (edge feathering)**

Cutback borders are a minimum of 30 feet wide and extend along as much of the field or opening edge as possible.

The width of the border is not required to be uniform throughout its length and may be increased depending on management goals and objectives. Generally, the wider the area the better the habitat it can provide. Narrow

borders are susceptible to heavy predation on animals that inhabit these areas.

Cut-back borders may be established at different times and locations throughout the property; or a portion of a field's edge may be established each year to provide various stages of regrowth.

Where existing herbaceous field borders occur along woodland edges, they may be widened and enhanced by cutting woodland edges back to encourage growth of shrubs and other plants. This method may be effective within forested areas adjacent to logging roads and landings or similar woodland settings.

Leaving cut slash and woody material on the ground or creating brush piles from the slash, may provide additional wildlife cover and deter browsing of new sprouts.

Trees or shrubs that provide a special source of food or cover may be left standing within the border during establishment. For example, species such as dogwoods, scattered conifers, oaks, viburnums and serviceberry are examples of species that may be retained.

Shrubby vegetation may also be planted within and along cut-back borders which may serve to supplement existing species and provide a specialized food or cover type (e.g. a conifer planting for winter cover). Refer to (490) Tree/Shrub Site Preparation and (612) Tree/Shrub Establishment as appropriate.

### **Coordinating with a Timber Harvest**

Timber harvests may be planned to coincide with the creation of forest openings. The methods described above to construct openings or maintain existing openings in forested areas, may also be utilized where timber production is an objective. A forestry inventory and management plan should always be developed prior to a timber harvest. The KY Division of Forestry, private consulting forester and/or the KY Department of Fish and Wildlife Resources biologists may be able to help coordinate these methods with timber production.

## Chemical Application

Herbicides can be effectively used to manipulate succession, control noxious or exotic species, reduce competition and improve the overall diversity. Spot application of chemicals may also be utilized to create snag trees or roosting areas for bats. Careful planning and application are required in the use of herbicides to improve existing habitat. Selection of a chemical should be based on several factors including: desired effect to the vegetative community, affects to non-target wildlife species(s), toxicological risks and off-site movement.

Application of herbicides to create openings should occur during times of the year when the trees are actively growing and chemical uptake is assured. Utilize spot application methods such as hack and squirt to avoid applying chemicals to non-target flora and fauna.

Chemicals must only be applied for the uses listed on the label. All manufacturers' recommendations, precautions and directions must be followed. Consult Univ. of KY Extension Service or the KY Division of Forestry for herbicide recommendations. A pesticide applicators license may be required for some herbicides.

Refer to [http://www.ca.uky.edu/forestryextension/publications/for\\_forfs/for120.pdf](http://www.ca.uky.edu/forestryextension/publications/for_forfs/for120.pdf) for information regarding herbicide recommendations.

## 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.

In certain settings, consider using a coppice (stump-sprout) 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 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) Woody Residue Treatment for more information concerning removal.

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 biologists, foresters and KY Department of Fish and Wildlife Resources (KDFWR) and KY Division of Forestry (KDF) personnel as applicable to develop meaningful site specific management plans and specifications.

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

- Win-PST Soil/Pesticide Interaction Hazard Ratings (if applicable)

## **Creation and Management of Grass/Forb & Idle Areas (Non-Hayland)**

### **Grassland Management (Non-Hayland):**

1. Purpose
2. Target species or guild
3. Size of area
4. Method(s)
5. Mowing dates and intensities
6. Minimum grass heights after removal
7. Dates for any areas remaining fallow
8. If applicable, a strip mowing schedule including
  - Total number of strips
  - Strip widths
  - Rotation length
  - Schedule
9. Operation and Maintenance;

### **Light Disking:**

1. Purpose
2. Target species (including home range)
3. Size of area
4. Any pre-treatment requirements
5. Total number of strips
6. Widths of strips (disked/undisked)
7. Disking schedule
8. Disking depth
9. Any additional seeding requirements including:
  - species
  - rates
  - planting dates
10. Operation and Maintenance

### **For Woodland Openings:**

1. Purpose
2. Target species (including home range identified on plan map)
3. Size of area
4. Opening Type
5. Site preparation (if any)
6. Method of establishment
7. Species to be planted including:
  - Rates
  - Method
  - Dates
8. Soil amendments
9. Operation and Maintenance;

**For Brush Piles:**

1. Target species
2. Number of brush piles
3. Location
4. Surrounding cover type
5. Size
6. 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. Successive treatments necessary to maintain the target vegetative community. For example, a mowing regime stated as mow 2 strips every year, etc.

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.

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

**REFERENCES**

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