

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**RESTORATION AND MANAGEMENT  
OF RARE OR DECLINING HABITATS**

(Ac.)

**CODE 643**

**DEFINITION**

Restoring, conserving, and managing unique or diminishing native terrestrial and aquatic ecosystems.

**PURPOSE**

To return aquatic or terrestrial ecosystems to their original or usable and functioning condition and to improve biodiversity by providing and maintaining habitat for fish and wildlife species associated with the ecosystem.

**CONDITIONS WHERE PRACTICE APPLIES**

Sites or areas that once supported or currently support a unique, dwindling, or imperiled native plant and animal community.

In Kentucky this practice applies to communities such as tall grass prairies, glades, barrens, savannas, native cane breaks, special aquatic sites and streams containing native mussel populations. Other declining or rare habitats may be identified by consulting with the Kentucky State Nature Preserves Commission and the Natural Heritage Program (KNP), Kentucky Department of Fish and Wildlife Resources (KDFWR) and or the U.S. Fish and Wildlife Service (USFWS). (See also the NRCS Threatened and Endangered Species list in Section II of the Field Office Technical Guide).

Other conservation practice standards may be applicable to use as components of this standard include but are not limited to:

- (314) Brush Management
- (315) Herbaceous Weed Control

- (327) Conservation Cover
- (338) Prescribed Burning
- (382) Fence
- (395) Stream Habitat Improvement and Management
- (472) Access Control
- (490) Tree/Shrub Site Preparation
- (612) Tree/Shrub Establishment
- (658) Wetland Creation
- (666) Forest Stand Improvement

**CRITERIA**

Planners should work closely with a biologist from NRCS, KDWR, KNP and/or the Kentucky Chapter of The Nature Conservancy to identify restoration techniques, species and maintenance requirements for this practice.

Measures implemented under this standard shall comply with all applicable federal, state and local laws, rules and regulations including formal and informal consultation with the USFWS (if applicable). Refer to the most recent version of the document entitled *Guidance Document for NRCS Compliance with the Endangered Species Act in Kentucky (ESA)* and for information regarding requirements for installing component practices under this and other standards when protected species are likely to occur.

The owner or operator shall be responsible for securing all required permits or approvals including, but not limited to, permits pertaining to the Clean Water Act sections 404 and 401, Stream Rights of Entry and sedimentation and erosion control. All required permits will be obtained prior to installation of any measures. Permit conditions will be incorporated into design, installation, management, operation

and/or maintenance requirements.

Methods used shall be designed to protect the soil resource from erosion and compaction. All habitat manipulations will be planned and managed according to soil capabilities and recommendations for management will avoid excessive soil loss.

Vegetative manipulations to restore plant and/or animal diversity can be accomplished by prescribed burning or mechanical, biological or chemical methods, or a combination of the four. Where prescribed burning is conducted it shall follow all guidelines delineated in the (338) Prescribed Burning practice standard.

Invasive plant and animal species and noxious weeds shall be controlled. When possible, control will be limited to that necessary to control undesirable species while still protecting habitat that benefit native pollinators and other fish and wildlife species that depend on the site for food, cover, and water.

When implementing disturbance regimes, undisturbed areas shall be conserved on a sufficient extent of the area to sustain disturbance-intolerant species. The amount of undisturbed habitat will be determined on a site specific basis and may depend on several factors including, but not limited to the type of community, size of existing habitat, species status, etc. Consultation with the NRCS staff biologist, KDFWR, KNP and/or USFWS may be necessary to determine the size and necessity of this area.

Exclusionary measures will be installed to prevent any disturbance to sensitive communities (livestock or human). Refer to (472) Access Control for more information.

Species and seeding rate specifications will be prepared on a site specific basis to achieve desired habitat condition.

Only high quality and ecologically adapted plant materials will be used. When feasible, only local ecotypes will be used.

Site preparation, planting dates and methods, and plant material care and handling shall optimize vegetation survival and growth.

Installation and management activities are not to disturb cover during the primary nesting period (May 15 – Aug 1). Exceptions may be granted for periodic management when necessary to maintain the health of the plant community or to meet specific requirements of individual species. Mowing, spraying or other management measures may be needed during the establishment period to control weeds or other pests.

A pretreatment assessment of the targeted habitat will be documented to provide a baseline for comparison with post-treatment habitat conditions. Goals or success criteria will be established using reference sites for guidance and comparison. Where no such reference site exists, use ecological site description or historic data to establish restoration goals.

Use of fertilizers, pesticides and other chemicals shall not compromise the intended purpose of this practice.

#### **Additional Criteria for Native Tall Grass Prairies, Glades and Barren Restoration**

Restoration of these habitats may require planning and installation of other components. Refer to conservation practice standards (314) Brush Management, (315) Herbaceous Weed Control, (327) Conservation Cover and (338) Prescribed Burning as applicable.

Utilize management techniques to remove unwanted (woody) or invasive species through mechanical, chemical, prescribed fire or a combination of these methods. If fire alone is utilized to maintain and/or assist with re-establishment of communities, prescribed burning shall be performed every 3 to 5 years. If feasible, prescribed fire should always be utilized to maintain native prairies, glades and barrens. Refer to (338) Prescribed Burning.

Interseeding desired species may be utilized to enhance the established remnant community or re-establish the natural historic community.

Native prairie plantings will include three pounds PLS per acre total of at least three native grass species and 2-5 pounds per acre of 4-7 native forbs.

Native forbs may be seeded from October 1<sup>st</sup> through June 30<sup>th</sup>. If possible, seed native forbs the fall or winter prior to native grass seeding, this will ensure that seeds go through a cold stratification period. Refer to (327) Conservation Cover for species, mixes and planting methods of native grasses and forbs.

#### **Additional Criteria Applicable to Savanna Restoration**

Savannas (scattered areas of trees) may be re-established in suitable areas that are transition zones between native prairies and forests. If herbaceous vegetation will be planted in addition, utilize the criteria under the prairie, glade, or barren planting section above. Refer to (612) Tree/Shrub Establishment and (490) Tree/Shrub Site Preparation for methods.

All planting materials, plant care, and planting methods shall be in accordance with the (612) Tree/Shrub Establishment and (490) Tree/Shrub Site Preparation.

A minimum of three (3) tree species shall be established. Refer to table 5 for species information.

- Central KY Counties - bur oak, chinquapin oak and blue ash should dominate plantings.
- Western KY Counties - plantings should be dominated by post oak and blackjack oak.
- Eastern KY Counties - historically dominated by short leaf pine, pitch pine and chestnut oak.

Trees shall be planted at a rate of 25 trees per acre with a spacing that shall not be closer than 30 feet. Some trees should be planted in clusters or blocks rather than evenly spaced to allow some parts of the savanna to be more open than other parts.

Tree planting stock will be a minimum of three (3) feet tall with at least 1/2 inch caliper. The large initial size is required to facilitate their protection from fire and reduce competition from grass. Use container grown or ball-n-burlap stock and when possible.

#### **Additional Criteria Applicable to Restoration of Native Cane Breaks**

Refer to (327) Conservation Cover for planting of cane breaks.

For areas that contain native stands of cane that are stunted, isolated, or sparse minimize or eliminate any access by livestock. Overgrazed stands require complete protection from grazing and fire during growing season to allow plants to regain vigor. For sparse stands, mowing and other disturbance should be eliminated to allow for revitalization.

Controlled burning may be performed under ideal humidity, soil moisture, and wind conditions no more frequently than every 3 to 4 years. Refer to (338) Prescribed Burning.

Mowing for management or maintenance on established stands should only occur no more frequently than once every 5 years. Refer to (647) Early Successional Habitat Development and Management for mowing strategies.

Flash grazing should be limited to one rotation every 3 years and should only be allowed after the cane is established. Refer to (528) Prescribed Grazing. On established stands, no more than 50 percent of the current year's growth by weight should be grazed off in any season.

In some instances the use of (314) Brush Management may be beneficial to remove competing shrub species. Selective herbicides may be used to release cane in an area where both cane and unsuitable introduced species exist.

#### **Additional Criteria Applicable to Creation of Ephemeral Pools**

Ephemeral Pools should be installed according to (658) Wetland Creation, Additional Criteria for Ephemeral Pools and Shallow Water Areas.

Where feasible, the addition of woody debris and/or basking areas for reptiles and amphibians shall be utilized. Debris should be distributed sparsely throughout the pool.

Cumulatively, these areas shall not exceed one-fourth of the total area of the pool.

**Additional Criteria Applicable to Restoration of Native Mussel Populations**

Refer to (395) Stream Habitat Improvement and Management and other associated practices such as (396) Aquatic Organism Passage, (472) Access Control, (382) Fence and other associated component practices.

Most mussel species are protected. Therefore, coordinate activities with biologists familiar with freshwater mussel ecology and habitat.

**CONSIDERATIONS**

Consider how this practice may be utilized to provide locally diverse native forage (forbs, shrubs, and trees) and nesting resources for pollinators. Many specialist pollinators are closely tied to rare plants or habitats and these plants may significantly benefit from efforts to restore and/or manage rare habitat. However, pollinator plants should only be planted if they were part of the rare ecosystem you are trying to restore.

Confer with other agencies and organizations such as the KDFWR, KNP, USFWS and The Nature Conservancy to develop guidelines and individual specifications for conserving declining habitats. Contact the NRCS State Biologist for assistance.

Consider rotating methods and timing of planned management or other treatments throughout the restored/managed area.

Consider the appearance of the restored/managed project, particularly in areas of high visibility and those areas associated with recreation. The shape and form of any structures as well as the planned plant community should relate visually to the surrounding area.

Consider the effects on and from adjacent land uses.

Consider short-term effects on water quality and wildlife resources.

Consider the effects of deer browse and other nuisance species when establishing vegetation.

Consider the effects to water temperature to prevent undesired effects on aquatic communities.

Consider times that are appropriate for recreation, observation and monitoring activities (e.g. recreational caving).

Consider plant materials centers and commercial growers in the development of materials for habitat restorations.

Consider those sites adjacent to existing communities as they increase complexity and diversity, decrease habitat fragmentation, and ensure colonization of the site by desired flora and fauna.

Consider how land use and habitat in the associated landscape may influence the ability to achieve restoration and management objectives.

Consider the likelihood of being able to maintain or establish important ecological disturbances such as burning, flooding or grazing.

Consider how the short and long term effects of climate change may influence the ability to achieve restoration and management objectives.

Generally, the size of the restored or managed habitat should be large enough to support populations of all species associated with the targeted habitat.

**PLANS AND SPECIFICATIONS**

Specifications for this practice shall be prepared. Specifications shall be recorded using approved specifications sheets and job sheets. Narrative statements in the conservation plan or other acceptable documentation may provide supplemental information to the specifications and job sheets. At a minimum plans and specifications shall include:

- a documented benchmark condition of the project area and objectives identifying the rare habitat(s) to be restored or enhanced with the intended goals and;
- any required permits;
- all component practices and specifications required for implementation of this practice including drawings, jobsheets and designs of any structures necessary to restore the project area
- a plan map showing installation of practices and locations;
- documentation of consultations with other agencies (if applicable);
- a planting plan (if applicable) including species, size of planting, spacing, amounts, planting dates and locations;
- soils information

### **OPERATION AND MAINTENANCE**

Haying, grazing, prescribed burning, forest stand improvement, and other management activities will be planned and managed (including access control) as necessary to achieve and maintain the intended purpose.

Vegetation management and maintenance activities shall not be conducted during critical life stages of fish and wildlife except when necessary to achieve the desired habitat condition.

Habitat conditions should be evaluated and compared to reference conditions on a regular basis to adapt the conservation plan and schedule maintenance to ensure the desired habitat condition.

Management and maintenance activities should be rotated to mimic natural disturbance regimes.

Items that shall be addressed in the operation and management plan as applicable are:

- the operation and maintenance plans for any individual practice components designed and installed under the provisions of other KY standards;
- a periodic inspection schedule of structures for damage assessment;
- any required maintenance of vegetation (e.g. nutrient management, reseeding, or

similar practices) to include timing and intensity; any management techniques to control noxious or invasive species.

Biological control of undesirable plant species and pests (e.g., using predator or parasitic species) shall be implemented where available and feasible; and

- any acceptable uses including the timing and intensities (e.g. forestry management, haying and livestock grazing plans) to allow for establishment, development, and management of the community and associated areas.

### **REFERENCES**

Barbour, M.G., and W. D. Billings (eds.). 2000. North American Terrestrial Vegetation. Cambridge University Press, New York, Second Edition.

Kuchler, A.W. 1964 Potential Natural Vegetation of the Conterminous United States. American Geography Society, Special Publication 36. Second edition (revised), 1975.

Noss, R.F., E.T. LaRoe III, and J.M. Scott. 1995. Endangered ecosystems of the United States: a preliminary assessment of loss and degradation. Biological Report 28; National Biological Service, Washington, D.C.

USFWS and NMFS, Endangered Species Act Consultation Handbook, Procedures for Conducting Consultations and Conferences, 1998.

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