

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
UPLAND WILDLIFE HABITAT MANAGEMENT

(Ac.)

CODE 645

DEFINITION

Provide and manage upland habitats and connectivity within the landscape for wildlife.

PURPOSE

Treating upland wildlife habitat concerns identified during the conservation planning process that enable movement, or provide shelter, cover, food in proper amounts, locations and times to sustain wild animals that inhabit uplands during a portion of their life cycle.

CONDITIONS WHERE PRACTICE APPLIES

Land where the decision maker has identified an objective for conserving a wild animal species, guild, suite or ecosystem.

Land within the range of targeted wildlife species and capable of supporting the desired habitat.

CRITERIA

General Criteria Applicable to all Purposes

Land treated with this practice shall be actively managed to improve or sustain the upland wildlife habitat at or above 50% of its potential, regardless of the primary land use.

The NRCS North Carolina Wildlife Habitat Evaluation Procedures (WHEP), or an alternative procedure approved by the NCRS state biologist, shall be used to measure land's habitat potential. WHEP is contained in the NRCS North Carolina FOTG, Section III.

WHEP results identify wildlife habitat limiting factors in the planning area.

Conservation practices shall be planned as needed to remove or reduce limiting factor(s) indicated by the WHEP results.

Operation and maintenance of this practice shall

be planned for at least 36 consecutive months.

Equipment travel, grazing, haying and other manipulation of habitat are essentially prohibited during April 15th - September 15th, in order to avoid disturbing wildlife reproduction.

The following manipulation of habitat during April 15th - Sept. 15th is acceptable:

- Site preparation, planting and weed control necessary for establishment of habitat-forming vegetation
- Control of warm-season pest plants or woody vegetation that impairs habitat function

Regulated noxious weeds and invasive plants shall be controlled in the planning area to the greatest extent practical.

Criteria for Establishing Plants that Provide Shelter, Food, or Enable Movement

Establishment of vegetation may be specified when habitat evaluation results indicate that natural cover or food is inadequate and the following criteria are satisfied.

Arrange all plantings to maximize their utility to wildlife.

Use of native species, regional/local eco-types, and source identified releases shall be a priority. Use of introduced/exotic species is discouraged.

Plant material specifications shall include only high quality and adapted species that produce desirable habitat conditions.

Use of viable, adapted wild collected native seed is authorized, provided that the plants are successfully established.

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

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service [State Office](#) or visit the [electronic Field Office Technical Guide](#).

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growth.

Natural Vegetation

Establishment of or preservation of naturally occurring grass, forbs, shrubs or forest stands may be specified.

Grasses or Forbs

Grass and forb establishment may be specified utilizing site adapted plant materials and seeding rates as indicated in Appendix 1, *Planting Perennial Grasses & Forbs for Wildlife* (attached).

Food Plots & Temporary Cover

Food plots and temporary cover by themselves do not satisfy the general criteria of this practice.

Food plots are seldom needed to correct a lack of wildlife shelter or food on land that is managed to meet or exceed the minimum WHEP value. However, food plots may address client objectives for attracting and concentrating wildlife for their use and enjoyment.

Food plots may be incorporated as components of comprehensive upland habitat management plans utilizing site adapted plant materials and seeding rates as indicated in Appendix 2, *Planting Food Plots & Temporary Cover for Wildlife* (attached).

Trees & Shrubs

Utilize site adapted plant materials and seeding rates as indicated in Appendix 1, *Planting Trees & Shrubs for Wildlife* (attached) and NRCS-NC Tree/Shrub Establishment (612) practice.

Criteria for Establishing Structures that Provides Shelter, Food, or Enable Movement

Installation of the following structures may be specified when habitat evaluation results indicate that natural cover or food is inadequate.

Nest Structures

Utilize specifications for materials, size requirements, installation location(s) and predator guard(s) for desired nesting wildlife provided by a NRCS, North Carolina Wildlife Resources Commission, or U.S. Fish & Wildlife biologist.

Snags

Snag abundance and distribution shall be determined by a NRCS, North Carolina Wildlife

Resources Commission, or U.S. Fish & Wildlife biologist.

Select trees meeting all of these criteria for snag creation:

- Poor quality, deformed trees, or trees with broken tops.
- Trees greater than 12-inches in diameter
- Trees located at least one tree-height's distance away from trails, roads, buildings, other structures and locations where falling debris will create an unacceptable risk to human safety.

Utilize these methods to create a snag:

- Leave a standing stump at least 4 feet high when a tree is harvested
- Cut-off the top of a living tree above its first whorl of branches, but at least 3 feet above ground.
- Girdle a band (removing bark and sapwood) at least 3 inches wide around tree's entire circumference at least 3 ft. above ground
- Apply an appropriate herbicide according to its label instructions

Top or girdle trees at or above the first whorl of branches, but at least 14 feet high (ideally, much higher). Smaller trees may be useful for some cavity nesters, as are stumps which are at least 3 feet high.

Large branches, extending at least 2 feet out from the trunk, can be cut to create foraging habitat on live trees not intended to be used as snags.

Roosting Cavities

Roosting cavity starts may be added to live trees or to snags at the time they are created. Do not add cavities to existing snags- it is not safe.

Cavity starts shall be at least 8" deep and 2" wide, and angled sharply upward into the cambium layer.

Forest Openings

Forest openings are semi-permanent patches of early succession habitat located within a uniform forest stand and fragmented landscape. Natural vegetation or food plots are managed in the opening.

Limit opening establishment to even-aged or monoculture forest stands ranging in size from 10 to 250 contiguous acres.

Limit each opening's size to 0.5 to 5 acres.

Locate an opening where it will receive abundant sunlight and the trees can be felled and moved without causing soil erosion.

Avoid locations that are wetland or highly erodible, especially when food plots are desired in the opening.

Create openings by harvest and utilization of existing woody vegetation, or by reclamation of logging decks. Prioritize removal of poorly formed and lower habitat quality trees. Avoid removal of high quality mast trees and trees with superior form. Leave snags and den trees standing to the greatest extent possible.

Unmerchantable debris may be windrowed into brush piles.

Specify at least five years of management, during which tree and shrub growth is controlled so it occupies no more than 10% of an opening's area. Utilize NRCS-NC Early Succession Habitat Development & Management (647) practice for developing opening management specifications.

Forest Canopy Gaps

Forest canopy gaps are relatively small, ephemeral openings in an extensive forest canopy. Overstory trees are killed or removed to increase sunlight reaching the forest floor and allow natural successional growth. Canopy gaps are not as large, nor as permanent as forest openings.

Limit gap establishment to forest stands comprised of at least 250 contiguous acres.

Limit each gap's size to less than 3 acres.

Locate a gap where trees can be felled without causing soil erosion and where it will receive abundant sunlight.

Create gaps by harvesting, felling or girdling existing woody vegetation. Prioritize removal of poorly formed and lower habitat quality trees.

Avoid removal of high quality mast trees and trees with superior form. Leave snags and den trees standing to the greatest extent possible.

Unmerchantable debris may be left in place.

Brush and Rock Piles

If possible, brush piles should be by-products of other land management activities such as forest harvest, land clearing, and firewood cutting.

Locate a brush or rock piles within a forest or within 10 feet of a forest edge, hedge, farm path, woods road, stream, or marsh.

Separate adjacent brush or rock piles by at least 100 feet.

Limit brush or rock pile density to 8 per acre.

Build a base at least 6-inches tall using cull logs, old fence posts, or piles of stumps or rocks. Arrange the base materials so 4-10" gaps remain between items in the base.

Addition of sections of plastic pipe or clay drain tile in the base of the pile may enhance the pile's utility to burrowing animals

Place tree tops, old Christmas trees, limbs, stumps, or rocks on top of the base to create a mound covering the base.

Finished piles shall be at least 4 feet high and 8 feet in diameter.

Criteria for Managing Vegetation to Sustain Desirable Habitat Conditions Over Time

Actions needed to sustain desirable wildlife habitat conditions over time include re-application of this practice at intervals longer than 3 years AND the following NRCS-NC conservation practices when applied to meet a wildlife habitat conservation purpose:

- Early Successional Habitat Development/Management (647)
- Forage Harvest Management (511)
- Forest Stand Improvement (666)
- Pasture & Hay Planting (512)
- Prescribed Burning (338)
- Prescribed Grazing (528)
- Restoration and Management of Rare or Declining Habitats (643)
- Riparian Forest Buffer (391)
- Riparian Herbaceous Cover (390)

- Tree/Shrub Establishment (612)
- Use Exclusion (472)

CONSIDERATIONS

WHEP is best suited for general wildlife habitat appraisal on land where wildlife conservation is not the client's top priority. An alternative habitat appraisal, addressing the life-cycle requirements of a specific group of species, or single species is best suited for use on land the client wants to manage to benefit the desired wildlife.

This practice may affect the target species as well as non-target species through mechanisms such as hunting, predation, disease transmission, nest parasitism, etc. Consider effects of this practice on species with declining populations.

Wildlife population control may be necessary to protect and maintain certain habitats. This is a responsibility of the landowner. State and federal regulations may apply to population control methods.

Undisturbed areas conserved at a sufficient extent during management activities, may sustain disturbance-intolerant animals and plants.

PLANS AND SPECIFICATIONS

NRCS shall ensure that plans and specifications for this practice are prepared by persons with adequate training in the fields of wildlife management, biology, or ecology.

Written specifications, schedules and maps shall be prepared for each planning area and each habitat type.

Specifications shall:

- Identify the amounts and kinds of habitat elements, locations, and management actions necessary to achieve the client's management objectives.
- Describe the appropriate method, timing and intensity of management needed to produce the desired habitat conditions and sustain them over time.

Specifications shall be transmitted to clients using NRCS approved specifications sheets, job sheets, or customized narrative statements included in the conservation plan.

OPERATION AND MAINTENANCE

The following actions shall be carried out to ensure that this practice functions as intended throughout its expected life:

- Evaluate habitat conditions on a regular basis in order to adapt the conservation plan and schedule of implementation.
- Annually inspect and repair structural or vegetative components of this practice.

REFERENCES

Bolen, Eric and William Robinson. 2002. *Wildlife Ecology and Management 5th Edition*. Prentice Hall, 656 pp.

Bookhout, T.A. (ed.). 1996. *Research and Management Techniques for Wildlife and Habitats, 5th Ed.* Wildlife Society, 740 pp

Payne, Neil F. and Fred C. Bryant. 1994. *Techniques for Wildlife Habitat Management of Uplands*. McGraw-Hill, Inc., 841 pp.

United States Department of Agriculture, Natural Resources Conservation Service. *National Biology Manual*. Title 190, Washington, DC.

United States Department of Agriculture, Natural Resources Conservation Service. 2004. *National Biology Handbook*. Washington, DC

**Appendix 1-
Planting Perennial Grasses & Forbs for Wildlife**

645 - 5

	Adapted to: Coastal plain (C), Piedmont (P), Mountains (M)	Planting Season	Single Species Stand (Lbs./acre)	TWO Species Mix (Lbs./acre)	THREE Species Mix (Lbs./acre)	FOUR Species Mix (Lbs./acre)	FIVE Species Mix (Lbs./acre)
NATIVE GRASSES			Native grass seed rates indicated are in Pound Pure Live Seed (PLS) per Acre. 1st figure is drilled rate & 2nd figure is broadcast rate				
Big bluestem	C, P, M	Spring	6	3	2	1.5	1.2
Broomsedge	C, P, M	Spring	5	2.5	1.6	1.25	1
Coastal panicgrass, 'Atlantic'	C, P	Spring	6	3	2	1.5	1.2
Deertongue 'Tioga'	P, M	Spring	6	3	2	1.5	1.2
Eastern gamagrass	C, P, M	Spring	4	2	1.3	1	0.8
Indiangrass	C, P, M	Spring	6	3	2	1.5	1.2
Little bluestem	C, P, M	Spring	5	2.5	1.6	1.25	1
Purple top	C, P, M	Spring	6	3	2	1.5	1.2
Sideoats grama	C, P, M	Spring	6	3	2	1.5	1.2
Switchgrass	C, P, M	Spring	6	3	2	1.5	1.2
Virginia wildrye	C, P, M	Spring	8	6	4	3	2
INTRODUCED GRASSES							
Red top			10	8	6	4	2
Kentucky bluegrass			15	12	9	6	3
Timothy			10	8	6	4	2
Orchardgrass			15	12	9	6	3

FORBS IN SEED MIXTURES			All rates for forbs are in PLS unless otherwise noted.				
Birdsfoot trefoil	C, P, M	Fall	4	2	1.3	1	0.8
Black-eyed susan	C, P, M	Fall	1	0.5	0.3	0.25	0.2
Roundhead lespedeza	C, P, M	Spring	Bulk 15	7.5	5	3.75	3
Coreopsis	C, P, M	Spring	1	0.5	0.3	0.25	0.2
Goldenrod	C, P, M	Fall	1	0.5	0.3	0.25	0.2
Partridge pea	C, P, M	Spring	6	3	2	1.5	1.2
Perennial sunflower (<i>Helianthus</i>)	C, P, M	Fall	1	0.5	0.3	0.25	0.2
Purple coneflower	C, P, M	Fall	1	0.5	0.3	0.25	0.2
Beggartlice (<i>Desmodium</i>)	C, P	Fall	8	4	2.6	2	1.6

**Appendix 2-
Planting Food Plots & Temporary Cover for Wildlife**

FOOD PLOTS & TEMPORARY COVER	Annual (A) or Perennial (P)	Adapted to: Coastal plain (C), Piedmont (P), Mountains (M)	Planting Season	Seeding Rate per Acre	Seeding Rate per 1,000 Sq. Ft.
Annuals					
Austrian winter pea	A	C, P, M	Fall	30	2
Barley	A	C, P, M	Fall	90	5
Crimson clover	A	C, P, M	Fall	10	1
Oats	A	C, P, M	Fall	90	5
Rye, grain	A	C, P, M	Fall	90	5
Wheat	A	C, P, M	Fall	90	5
Buckwheat	A	C, P, M	Spring	50	3
Corn	A	C, P, M	Spring	15	1
Kobe lespedeza	A	C, P, M	Spring	30	1.5
Korean lespedeza	A	C, P, M	Spring	30	1.5
Partridge pea	A	C, P, M	Spring	10	2
Ragweed	A	C, P, M	Spring	5	0.5
Sunflower	A	C, P, M	Spring	10	1
Cow peas	A	C, P, M	Summer	60	4
Foxtail millet	A	C, P, M	Summer	10	1
Pearl millet	A	C, P, M	Summer	10	2
Proso millet	A	C, P, M	Summer	10	2
Sorghum, Milo	A	C, P, M	Summer	8	0.5
Soybeans	A	C, P, M	Summer	12	2
Egyptian Wheat, 'Sudex'	A	C, P	Summer	10	1
Perennials					
Alfalfa	P	C, P, M	Fall	10	1
Alsike clover	P	C, P, M	Fall	8	0.5
Birdsfoot trefoil	P	P, M	Fall	8	0.5
Ladino clover	P	C, P, M	Fall	5	0.5
Red clover	P	C, P, M	Fall	8	0.5
White Dutch clover	P	C, P, M	Fall	5	0.5
Flat pea 'Lathco'	P	C, P, M	Spring	12	1
Chufa	P	C, P, M	Summer	20	1.5

**Appendix 3-
Planting Trees & Shrubs for Wildlife**

645 - 7

	Wetness Tolerance: High, Moderate, or Low	Height at Maturity (ft.)	Noted for: Flowers, Berries, Fruit, Nuts, Cover, or Habitat	Spacing (ft.)
Apple	High-Moderate	30-40	Fruit	15 x 15
Bald cypress	High	100-120	Seeds/Habitat	20 x 20
Beautyberry	Moderate-Low	5-10	Drupes	10 x 10
Beech	High-Moderate	60-80	Nuts/Cover	20 x 20
Black walnut	Moderate	70-90	Nuts	20 x 20
Blackberry	Moderate	4-6	Berries/Cover	10 x 10
Blueberry	High-Moderate	4-6	Berries	10 x 10
Chinquapin	Low	40	Nuts	15 x 15
Chokeberry	High-Moderate	12-15	Fruit	10 x 10
Crabapple	High	30	Fruit	15 x 15
Dogwood, flowering	High-Low	25	Fruit	15 x 15
Elderberry	High-Moderate	10-15	Berries	15 x 15
Gallberry	High-Moderate	3-6	Drupes/Cover	10 x 10
Hackberry	High-Moderate	50-90	Drupes	20 x 20
Hawthorn	High-Low	20-40	Fruit/Cover	15 x 15
Hazelnut	Moderate	10	Fruit/Cover	10 x 10
Hickory	High-Low	Spp. Depend.	Nuts	20 x 20
Holly	High-Moderate	40-70	Fruit/Cover	15 x 15
Mulberry	Moderate	60	Fruit	20 x 20
Oaks (many varieties)	High-Low	Spp. Depend.	Nuts	20 x 20
Pecan	Moderate	100	Nuts	20 x 20
Persimmon	Moderate-Low	20-70	Fruit	20 x 20
Plum, American	High-Moderate	20-30	Fruit/Cover	15 x 15
Plum, Chickasaw	Moderate	6-12	Fruit/Cover	10 x 10
Red cedar	Moderate-Low	40-60	Cones/Cover	20 x 20
Serviceberry	High-Moderate	40	Fruit	20 x 20
Shrub lespedeza 'VA-70', 'Amquail'	Low	10-12	Seeds	Seedlings 5 x 5
Sugarberry	High-Moderate	80	Drupes	20 x 20
Sumac	Moderate-Low	12	Fruit	10 x 10
Winterberry	Moderate	12	Drupes	10 x 10
Yaupon	High-Moderate	20	Fruit/Cover	15 x 15