



UPLAND WILDLIFE HABITAT MANAGEMENT

Conservation Practice Standard 645 Guidance

Natural Resources Conservation Service (NRCS)

July 2006



PURPOSE

The purpose of this guidance is to provide additional information for upland wildlife habitat management outlined in Florida NRCS Conservation Practice Standard, Upland Wildlife Habitat Management, Code 645.

Habitat Needs

Wildlife species life histories and habitat needs may be found in : *Management for Wildlife: a supplement to wildlife standards and specifications for Florida*, Wildlife Habitat Management Institute (WHMI) species leaflets, NRCS guide/fact sheets, University of Florida Institute of Food and Agricultural Sciences (IFAS) publications where available and other applicable reference material; or contact a NRCS or other qualified biologist.

Habitat Evaluation

The current type, amount, distribution of habitat elements and their management need to be considered during the evaluation process

and will follow established NRCS procedures for Florida located in the National Biology Manual (NBM), Part 519, Exhibit FL519.1.

The evaluation will result in a current land use habitat index as described in Section III of the Field Office Technical Guide (FOTG). The current desired quality criteria goal is 0.5 or greater for wildlife habitat.

If a habitat index is below acceptable levels (<0.5), recommend management alternatives that will raise the rating to at least minimum standards.

If a habitat index is at minimum levels or above (≥ 0.5), recommend management alternatives that will preserve, maintain or improve existing wildlife habitat based on land management objectives.

Habitat Elements and Resources

Consider the following habitat elements when assessing and planning wildlife habitat. Not all may apply to every habitat type.

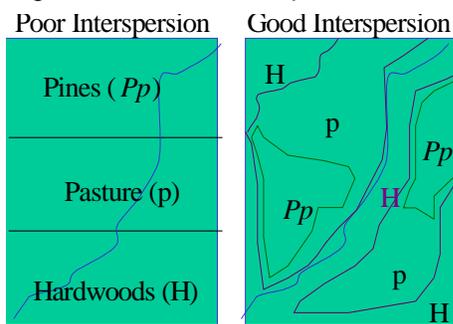
1. Food Needs
 - a. type
 - b. amount
2. Cover Needs
 - a. type
 - b. amount
3. Water Needs
 - a. quality
 - b. quantity
 - c. accessibility
 - d. seasonal availability
4. Spatial Needs
 - a. interspersion and distance to:
 - i. crops
 - ii. grasses and/or legumes
 - iii. shrubs
 - iv. trees

- v. water
 - vi. openings
 - b. linking or access to the elements above
 - c. vertical habitat structural diversity
5. Migration Needs
- a. routes
 - b. season of use
 - c. corridors

The quantity, quality and distribution of resources largely determine the home range sizes and population densities of wildlife that can be supported within a given area.

The number of species present in a given area (i.e., species richness) is positively correlated with horizontal interspersion (Fig. 1) and vertical structural diversity of habitat elements.

Fig. 1. Horizontal Interspersion



Structurally diverse communities have a greater variety of microclimates and resources such as food and cover; therefore, greater potential for resource partitioning exists among and between species, which translates to a greater diversity and density of wildlife.

Some threatened or endangered species have very specific habitat requirements and do not require spatially diverse habitat.

The problems of habitat fragmentation need to be considered when using this practice.

Creating large blocks of native habitat versus increased edge, benefits many bird species and large predators. However, many game species such as quail, cottontail rabbit, white-tailed deer and wild turkey are edge loving species.

Development and Management of Upland Wildlife Habitat:

The conservation plan identifies the type, amount and distribution of habitat elements and practices necessary to preserve, manage or establish sufficient food, water and cover to achieve management objectives.

Techniques to maintain, enhance or create wildlife habitat include, but are not limited to, wildlife strip disking, roller-chopping, prescribed grazing, herbicide use, hydro-ax, mowing, vegetative plantings and use of prescribed burning. These techniques can be used alone or in combination.

All soil disturbances need to follow topographical contours, where risk of soil erosion is present.

Encourage management by ground disturbance or prescribed burning over mowing.

Encourage establishment of native plant species over introduced species. Do not use Category I invasive plant species and avoid Category II invasive plant species, as defined by the Florida Exotic Pest Plant Council, for wildlife plantings.

Provide management measures to control invasive and noxious weed species.

Use herbicides according to labeled instructions and rates, and only for wildlife habitat reclamation or control of invasive and noxious weeds.

Apply appropriate herbicides in a "spot spraying" technique to undesirable herbaceous vegetation in order to protect native forbs and legumes. These plants benefit native pollinators and provide forage or animal foods (primarily insects) for wildlife.

Establishment of Wildlife Food, Cover, Openings, and Habitat Management

Encourage establishment of volunteer native vegetation over planting.

I. Vegetative Plantings:

Base wildlife cover or food plantings on requirements of the targeted wildlife species desired or beneficial insect population(s).

Consider plantings of annual, re-seeding annual and perennial crops when:

- Establishing high quality food and/or cover in upland areas for identified highly valued species or group(s) of species (e.g., quail, deer, turkey, squirrel, waterfowl, upland game birds or other wildlife of economic and/or recreational value).
- It may be necessary to establish a cover crop to reduce erosion prior to natural vegetation establishment.

Considerations:

Consider the benefits of native warm season grasses. These grasses tend to be bunch grasses rather than sod-forming grasses. Their upright growth habit with bare ground between clumps provides overhead protective cover, quality nest sites, freedom of movement, habitat for insects used as food and a successful foraging environment for seed-seeking wildlife.

A good method of obtaining locally adapted seed sources is by collecting seed from native warm season grasses and forbs after a growing season prescribed burn. Preliminary seed viability studies in south-central Florida indicate that seed viability is greatest after burns conducted during the 1st to 3rd week of June.

Place supplemental food plantings where two or more different types of vegetative communities join.

Food preferences among wildlife vary from place to place, so consider experimenting with a variety of locally adapted crops until determining which crops work best for the intended purpose in a particular locality.

Consider using several different crops within the same field either in strips, mixed together or planted separately during different seasons. Establishing both warm and cool season forages attracts wildlife year-round.

When using mixtures, reduce the standard seeding rate by at least ½. For turkey and quail, reduce seeding rates further (up to ¼ of the standard seeding rate) to allow easier travel and access to bare ground.

A common reason for vegetative establishment failure is inadequate soil moisture. If soil moisture is inadequate due to drought or unseasonable dry weather, delay all vegetative establishment efforts. It is usually better to plant late under proper conditions than to plant at normal times under improper conditions.

For more information, refer to Florida NRCS conservation practice standards: Nutrient Management, Code 590; Tree and Shrub Establishment, Code 612; Range Planting, Code 550; Pasture and Hay Planting, Code 512; Prescribed Burning, Code 338 and other applicable publications listed under References.

II. Forested Wildlife Openings and Food Plots:

Forest wildlife openings and food plots need to be 1 to 3 acres in size.

Forest openings must comprise no more than 5% of the forest acreage in which they are planned and must have a minimum width of 150 feet.

Maintain forested openings by periodic burning, mowing, disking or roller-chopping at intervals not to exceed 3 years.

Supplemental food crops will not constitute more than 5% of the total management area. Locate these plots near screening or escape cover and adjacent to other active management practice areas.

Considerations:

Food plot establishment and management is expensive, time consuming and should be considered as a supplemental source of food for wildlife and not a replacement or substitute for good habitat management.

Where possible, forest openings and food plots should be longer than wide, irregularly shaped, evenly distributed and not be placed adjacent to major roads or property boundaries.

Smaller openings provide greater benefit to smaller wildlife such as quail and small mammals, while larger openings benefit larger wildlife such as deer and turkey.

Consider cleaning up logging decks established during normal logging operations

and manage them as forest openings and/or food plots.

When creating wildlife openings and food plots for dove, quail and turkey, have bare ground available as dusting and grit collection areas.

III. Transition Zones (i.e., Ecotones or Edge) and Herbaceous Wildlife Cover Strips:

Herbaceous wildlife strips or transition zones must be at least 30 feet in width.

For planned and newly planted herbaceous cover strips or transition zones, introduced sod-forming grasses (e.g., bahiagrass, bermudagrass, etc.) provide minimal value.

If introduced sod-forming grasses are already established where herbaceous wildlife cover strips or transition zones are planned, they must be either eradicated or greatly reduced to levels of no more than 30%.

Maintain transition zones and cover strips through appropriate disturbance (e.g., prescribed burning, light disking, roller-chopping, mowing, etc.) at least every three years.

Manage transition zones or herbaceous cover strips which are greater than 600 feet in length, on a "rest-rotation" system where no more than 50% of the available area is disturbed for maintenance at one time. For example, a 600-foot long by 30-foot wide transition zone can be divided into two 300-foot lengths which can then be lightly disked during separate years on an alternating rotation. The remaining vegetation may be manipulated once vegetation in previously disturbed areas recovers to a median height of 12 inches.

Do not exceed 35% canopy cover of woody shrubs/trees within a transition zone or cover strip area; however, canopy cover may exceed 35% within patches of woody vegetation that serve as protective cover or denning areas.

Considerations:

Wider transition zones or herbaceous wildlife cover strips have been shown to reduce game and non-game wildlife losses to

predators; therefore, consider making these areas as wide as practicable.

Repeated heavy disking followed by spot herbicide treatments has proven to be effective in controlling many introduced sod-forming grasses.

IV. Hedgerows, Wildlife Conservation Buffers and Corridors:

Design hedgerows to provide concealed travel ways in, across or around fields (Refer to Florida NRCS Conservation Practice Standard Hedgerow Planting, Code 422 and Biology Technical Note FL-37- Guidelines for Hedgerows).

Corridors are landscape linkages between larger existing ecological communities and consist of locally adapted native vegetation benefiting wildlife as either food or cover.

All timbering or mechanical operations performed close to wetlands, perennial lakes, rivers, streams, sinkholes or intermittent versions of the above will follow NRCS Practice Standards or *Florida Silviculture Best Management Practices* (Florida Division of Forestry, 2004) as appropriate. Apply the standard that provides the greatest protection to the environmentally sensitive areas.

Considerations:

In general, a greater number and variety of wildlife use a wider hedgerow, corridor or buffer. Forested corridor widths less than 50 feet do not provide adequate habitat for even small mammals and serve only as limited travel lanes.

In addition, wildlife losses to predators are strongly correlated to narrow edges and corridor widths. Studies have shown that narrow riparian buffers result in very high losses of small mammals, songbirds and neotropical migrants.

Additional information on hedgerows, riparian buffers and corridors can be found in the *National Biology Handbook (NBH)* and *Forestry Technical Note, FL-17 - General Specifications for Establishing Riparian Forest Buffers*.

V. Nest and Den Boxes:

Build nest or den boxes with rough cut cypress, cedar or other durable rot-resistant wood.

Do not construct boxes of metal or plastic. Do not use materials treated with creosote, green preservative (i.e., "pressure treated") or finished with pentachlorophenol as an ingredient.

Firmly attach boxes to a support post, building or tree.

Annually maintain boxes in good working condition and remove material from the previous year's nesting attempt.

Install predator guards if predation is a problem.

Considerations:

Consider adding several inches of nesting material (e.g., wood chips or shavings – do not use sawdust) to boxes prior to the nesting season.

For more information concerning box construction, placement and density specifications, refer to the NBM, Part 519, Exhibit FL519.2 and WHMI Leaflet #20: *Artificial Nesting Structures*.

VI. Vegetation Management:

Conduct mechanical disturbance of herbaceous or woody vegetation between September 15 and March 1.

Exceptions will be allowed to maintain the health of the plant or ecological community being managed for the benefit of wildlife (e.g., use of prescribed burning to mimic natural seasonal occurrence of fire, mechanical or other means to control undesirable vegetation during establishment or restoration of desirable vegetation).

A. Wildlife Strip Disking

Strips need to be greater than 30 feet in width and as long as is practicable.

Where feasible, implement strip disking for wildlife as a "rest-rotation" system where no more than 50% of the available area to be disked is disturbed in any one year.

Lightly disk strips (i.e., disks should run parallel, or nearly so, to the direction of travel and at a depth of only 2 to 4 inches) with the objective of leaving at least 30% residue after disking is completed.

Considerations:

Strip disking releases fields from sod-forming grasses, reduces litter accumulation, exposes bare ground and stimulates germination of desirable vegetation which increases insect populations by as much as four times; and is less expensive than planting desirable wildlife plants for food and cover.

The season of disking has a great deal to do with determining the types of plants that are encouraged. Use a combination of seasons for strip disking in order to derive the greatest benefit to wildlife.

- Disking in April or May tends to produce more forbs and native grass species that will attract insects which are important as food for birds. *Note: If undesirable plants (e.g., sand spur (Cenchrus spp.), sickle pod (Cassia obtusifolia), coffee weed (Cassia occidentalis), etc.) are a problem, disking at this time should be avoided.*
- Disking in June favors forbs such as Rough Mexican clover (a.k.a., Florida pusley, *Richardia scabra*) and morning glory (*Impomea* spp.) that are browsed by deer.
- December to February disking encourages the establishment of legumes and forbs such as ragweed (*Ambrosia* spp.), partridge pea (*Cassia chamaecrista*) and beggarweed (*Desmodium* spp.) which benefit Northern bobwhite quail.

If done properly, strip disking for upland wildlife management results in far less soil disturbance than typical seedbed preparation. Deep disking should be avoided unless the goal is to eradicate or reduce introduced sod-forming grasses.

B. Wildlife Mowing

For grassland or established field borders of native warm season bunch grasses, mow no lower than 12 inches during the

growing season (spring or early summer, before or after nesting) and 10 inches during the dormant season (mid-winter). If the grass component of the stand is primarily sod-forming grasses, stands can be mowed to as low as a 4-inch stubble height during the dormant season.

Where practicable, implement mowing as a “rest-rotation” system where no more than $\frac{1}{3}$ to $\frac{1}{2}$ of a forest stand or wildlife opening is mowed in any given year. For example, alternate mowing between 2 or 3 pine rows and skipping the next 4 or 6, rows respectively, before mowing the next 2 or 3 rows will result in a three year rotation.

For planted pines, mow vegetation to a height of 4 to 6 inches on a “rest-rotation” plan to maintain health of stand and improve wildlife habitat. When managing for sod-forming grasses, mow during the growing season; for bunch grasses/native warm season grasses, mow during the dormant season only.

Considerations:

Mowing is a useful means to control hardwood encroachment, to maintain early succession vegetation and to reduce wildfire fuel hazards when prescribed burning, disking or roller-chopping are not feasible.

Consider row spacing, bedding and stump height prior to recommending mowing within pine stands.

Consider breaking hayfields into sub-units and rotationally mow them to allow some useable wildlife habitat to be available at all times.

If hayfields are to be mowed during the prime ground-nesting season (March to August), the following measures will be taken to minimize impacts to wildlife:

- no night mowing,
- fields should be mowed from the center outward to allow wildlife a chance to flee toward the edges of a field rather than herded or concentrated towards the middle.

C. Wildlife Brush Management

Use roller-chopping, chipping, web-plow or other mechanized means to manage shrub or brush to increase production of wildlife food, improve or restore habitat interspersed and linkage, or otherwise enhance habitat conditions for target wildlife species.

Considerations:

Saw palmetto (*Serenoa repens*) provides good cover and food for a variety of wildlife, but an extensive overgrown palmetto under- or mid-story can preclude use by some wildlife. Saw palmetto control is best achieved by prescribed burning followed by roller-chopping several months later, preferably under wet conditions within the same growing season.

Leaving patches of saw palmetto near pasture edges and palmetto buffers surrounding hammocks and wetlands provides many benefits; however, it may be necessary to mow or chop holes in these buffers to allow interior access for some wildlife.

For more information, refer to Florida NRCS Conservation Practice Standard Brush Management, Code 314.

D. Wildlife Stand Improvement (WSI):

Use silvicultural selective thinning techniques to implement WSI and improve plant and structural diversity of forest stands for benefit of wildlife.

Encourage uneven-aged timber stand management.

Remove trees of lesser value to wildlife and/or vigor by felling or girdling and/or herbicide treatment. Maintain original diameter classes and species composition to maximize over-, mid- and under-story diversity.

Maintain valuable hard and soft mast producing trees and shrubs in accordance with wildlife habitat management objectives.

Leave snags, cavity trees and herbicide treated or girdled trees standing where safe to do so.

Evaluate the need for additional thinning every 5 to 10 years.

i. Mixed or Hardwood Forest

Maintain valuable soft and hard mast producing trees (those with well rounded crown development and whose diameter at breast height is at least 10 inches).

ii. Pine Forest

Consider WSI when canopy cover exceeds 50% (usually between 12 to 20 years of age, depending on stocking rate and site index).

Thin to appropriate basal area to enable sunlight to reach at least 50% of the ground at midday.

Considerations:

Consider more aggressive thinning near the edge of a stand in order to produce a more gradual ecotone between differing habitats.

During thinning of hardwood stands, leave both white and red oaks. One oak group, or management unit, will usually continue to produce acorns when the other group has failed.

Leave felled trees if they are not to be used for commercial purposes, or organize them into brush piles where safe to do so.

In pine stands it may be necessary to follow thinning operations with a prescribed burn to remove excessive duff or logging debris in order to stimulate re-growth of ground vegetation and seed production.

For more information, refer to Florida NRCS Conservation Practice Standards Forest Slash Treatment, Code 384 and Forest Stand Improvement, Code 666.

E. Wildlife Prescribed Burning

Always encourage prescribed burning over other vegetative management techniques when the community is fire dependent (i.e. all plant communities except hardwood climax sites) and where burning is feasible.

Considerations:

Where practicable, the planner should mimic natural fire frequencies (Table 1) and seasons of occurrence for the ecosystem to be burned.

Ecological Communities	Interval (years)
Dry and Wet Prairie, Slough	1 to 7
S. FL Flatwoods	1 to 7
Depression Marsh	2 to 25
Longleaf Pine/Turkey Oak Hills	3 to 7
N. FL & Cabbage Palm Flatwoods	3 to 7
Mixed Hardwood Pine	3 to 25
Sawgrass Marsh	3 to 25
Floodplain Marsh	3 to 25
Scrubby Flatwoods	4 to 10
N. & S. FL Coastal Strand	8 to 100
Cypress Swamp	8 to 100
Bogs and Bays	25 to >100
Interior Scrub (e.g. Sand pine or Rosemary scrub)	25 to >100

Burn compartment size, season, type and intensity of burn may be dictated by the life history requirements of desired wildlife (Table 2).

Species	Home Range	Burn Size (ac), etc.
White-tailed deer	≈ 640 acres	< 320 acres; variety of cool and warm season burns with a bias toward the cool season; inter-fire interval of 3-5 years.
Wild turkey flock	1,000 - 2,000 acres	< 320 acres; variety of cool and warm season burns with a bias toward the warm season; inter-fire interval of 2-5 years
Bobwhite quail covey	N.FL ≈ 40 S.FL ≈ 300 acres	N. FL < 40, S. FL < 300; cool and warm season with a bias toward late cool season: inter-fire interval of 1-3 years
Red-cockaded woodpecker	300-500 acres	Burn size not important; protect cavity trees by mowing and/or backfiring from base of tree; inter-fire interval of 2-5 years
Scrub jay	≈ 25 acres	Burn no more than 25% of available habitat; spatially separate burns; 10-20 year inter-fire interval; scrub maintained < 10 ft in height

Many native grassland birds nest on the ground during the growing season (Table 3). Since growing season fires are required to maintain a healthy grassland ecosystem, it is important to consider these burns and their impacts on species in a habitat development plan.

Table 3. Grassland Bird Nesting Information

Species	Nesting Habitat	Nesting Season
Bachman's sparrow	Under saw palmetto or thick broomsedge grass; territory size=12.6 acres	April-July
Eastern meadowlark	Shallow depressions within dense, well concealed native vegetation; territory size= 6.9 acres	March-July
Eastern towhee	At base of trees or shrub on the edge of grassland area; territory size= 3.95 acres	March-July
Florida grasshopper sparrow	Under the leaves of palmetto, dwarf oak, dwarf huckleberry or St. John's Wort; territory size= 4.45 acres	1) March-June 2) July-Sept.
Loggerhead shrike	Open-growing shrubs or small trees; territory size= 20.6 acres	March-June

Maintain at least 20% of ground nesting cover in a grass dominated habitat when a prescribed burn is to be executed immediately prior to or during the prime ground nesting period (i.e., March to August).

For more information, refer to Florida NRCS Conservation Practice Standard Prescribed Burning, Code 338.

F. Grazing Management for Wildlife:

Conduct livestock grazing to maintain or improve vegetation structure and composition primarily for the benefit of wildlife or maintenance of healthy ecological communities.

Considerations:

Prescribed grazing, if properly implemented, can be one of the easiest and least expensive tools for maintaining early successional habitats in good condition. Herbaceous species composition can be maintained and the palatability and nutrition of forage increased with proper grazing management.

In order to provide adequate cover for wildlife, stocking rates should be regulated to ensure that native warm season grasses are not grazed lower than 8-10 inches during the growing season. Practice rotational grazing management to ensure adequate rest following herbivory, this allows native grasses the opportunity to develop required leaf area and to produce seed.

In prime or sensitive ground nest areas, consider deferring grazing until after mid-July.

For more information, refer to Florida NRCS Conservation Practice Standard Prescribed Grazing, Code 528A.

G. Cropland Management for Wildlife:

Encourage no-till or strip till cropping systems (Florida NRCS Conservation Practice Standard Residue Management, Code 329A), conservation buffers, herbaceous wildlife cover strips and transition zones where practicable and discourage late season deep tillage.

Leave unharvested crop strips for wildlife cover and consumption along edges of fields near screening or escape cover.

Where possible, rotate unharvested crop strips left for wildlife (e.g., leaving an unharvested strip along one field border one year and the opposite border the following year).

Considerations:

Although any unharvested crops left for wildlife are a bonus, more benefit can be obtained if unharvested strips are greater than 15 feet in width.

Consider leaving unharvested crops from a previous growing season through the following growing season to enhance cover for ground nesting species.

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