



ESTABLISHING, MAINTAINING, AND MANAGING HABITAT BUFFERS FOR UPLAND BIRDS

Natural Resources Conservation Service (NRCS) January 2005

INTRODUCTION

Northern bobwhite quail are valued native game bird with a historic range in 35 states. This treasured bird was once an important part of Maryland's farming landscapes and hunting heritage. However, bobwhite populations have declined by an estimated 66% range-wide since 1980. Quail have disappeared even more rapidly in Maryland, declining over 87% since 1980.

Traditionally, quail thrived in Maryland's agricultural regions. Important habitats such as brushy hedgerows and weedy fields were components of virtually every farm during the middle part of the last century. But forest succession, urbanization, and the increased use of more efficient "clean-farming" methods rapidly eliminated the necessary habitats for these prized game birds.

The USDA Farm Service Agency's Northern Bobwhite Quail Habitat Initiative aims to reverse habitat loss. In Maryland, up to 2,100 acres of CP33 "bobwhite buffers" can be enrolled to provide high-quality field borders on agricultural lands. This practice is targeted for areas of the state that provide the best opportunity to increase currently low quail populations -- the Eastern Shore counties of Kent, Queen Anne's, Talbot, Caroline, Dorchester, Wicomico, Somerset, and Worcester, and the Southern Maryland counties of Charles, Calvert, and St. Mary's.

CP33 buffers can be installed to establish strips of herbaceous vegetation around the perimeter of crop fields. Buffers must be a minimum of 35 feet wide, and can be no more than a maximum average width of 120 feet. These wildlife buffer strips can play a vital role in increasing food and cover for not only bobwhite quail, but also the wide array of grassland-dependent songbirds that thrive in similar habitats.

An important aspect of this buffer practice is that the buffer does not have to be planted. Buffers can simply be delineated and left to re-vegetate naturally. These "fallow buffers" are often the most preferred habitats of bobwhites in Maryland.

For those that choose to plant their enrolled acres, there are several approved species of grasses and legumes that will provide optimal habitat for quail. Recommended native grasses include little bluestem, broomsedge, deertongue, purpletop, side-oats grama, and Canada or Virginia wild rye. These grasses have a "bunch-type" growth form, which makes them ideal for quail habitat. Recommended legumes include clovers,



Photo by Roger Hill

annual lespedezas, and partridge pea. Native wildflowers may also be added to the mix.

Buffers may also include native shrubs on up to 10% of the acreage to provide escape cover for quail and other wildlife.

Management of bobwhite buffers is important to keep the buffers in proper condition to provide high-quality habitat. Periodic disturbance by light-disking and/or prescribed burning is essential to maintain optimal vegetation. Although the initial establishment of naturally created habitat buffers usually involves minimal effort, long-term management requires a commitment of labor and equipment, and needs to be well-planned.

This job sheet provides instructions for the establishment of CP33 Habitat Buffers for Upland Birds, using either planting or natural regeneration methods. It also outlines the steps necessary to control woody species encroachment and noxious weeds while encouraging native herbaceous vegetation. By using proper habitat management techniques, the buffer will provide vital habitat for quail and other upland birds for the duration of the contract.

PLANTING GRASS-LEGUME BUFFERS

Site Preparation

Before planting a grass-legume mix, it is essential to reduce competition if there is other vegetation present, such as other grasses or weeds. Warm-season grass seedlings are slow to establish, and can be easily out-competed by faster growing weeds and most cool-season grasses. The type and density of existing vege-

tation will determine how much pre-planting control is needed.

It's important to allow adequate time to complete this process. If significant quantities of noxious or aggressive weeds or invasive plants are present, be aware that you may need a year or two to control them before you can plant, especially if you will be planting a large area. By state law, noxious weeds in Maryland are Johnsongrass, shattercane, Canada thistle, bull thistle, plumeless thistle, and musk thistle.

Sites without Existing Vegetation - If the seed mix will be planted into a clean, relatively weed-free area, then competition from existing vegetation should not be a concern. However, a cover crop or nurse crop may be needed for erosion control and/or to reduce future weed competition (see page 3).

Take into account any noxious or aggressive weeds in cropland that might have been suppressed (but not killed) with previous herbicide applications. If live rootstocks are present, these weeds may be very difficult to kill in a new planting without destroying the desirable plants. If you think you have a significant weed problem, it may be prudent to plant a temporary cover crop such as spring oats and use an appropriate herbicide to treat weeds for one full growing season. Then plant the grass-legume mix the following year. If you don't know the site's weed history, consider contacting the local Maryland Department of Agriculture weed control specialist. The local specialist may have a record of weed control assistance previously provided on the property.

Sites with Existing Vegetation - If the grass-legume mix will be planted into existing vegetation (for example, other grasses or weeds), you will need to reduce competition before planting. For sites that need extensive preparation, much of the work can be done during the fall prior to spring planting.

Mow or brush hog the planting area. Then either treat the area with an appropriate herbicide or cultivate to reduce competition. If weeds are tall and dense, apply an appropriate herbicide first and allow the weeds to die before mowing and preparing a seedbed.

Using herbicides. Choose a non-selective herbicide such as glyphosate (for example, Roundup, KleenUp). A selective herbicide such as Plateau may be used instead, depending on the species of grasses, legumes, or wildflowers you are planting, and the species of weeds you are trying to control. Follow all label directions when using herbicides, and consider herbicide persistence (carryover) as it may affect new plantings.

For extremely vigorous grass or weeds, you should plan to make one application of herbicide in early fall, followed by another the next spring before planting. Or, if you make the first herbicide application in the spring, you should plan to make a second application a

few weeks before planting, depending on label directions.

Do not plant your grass-legume mix until the competing vegetation is sufficiently controlled. It is much easier to control the competition before planting than afterward. Cultivation of the planting area may be needed following herbicide treatment if the dead plant matter is very thick and will be difficult to plant through. You may also need to re-spray after cultivation if weed seeds brought to the surface germinate.

Using cultivation only. If you do not want to use herbicides, then you will need to cultivate the field or planting site. Cultivation is usually less effective than herbicides for killing heavy sod or persistent weeds. Also, bare ground produced by cultivation may be subject to erosion and can provide a good seedbed for more weed growth. If necessary, use a cover crop or nurse crop (see page 3) to control erosion and help suppress weeds.

Herbicide Carryover - Carryover from herbicide treatments (recently applied or from prior years) can pose a threat to new plantings. Seedlings are particularly sensitive to herbicide carryover. Herbicides such as Basagran, Blazer, Poast, Plateau and Roundup have low persistence and generally do not pose a risk for carryover. Herbicides such as Atrazine, Preview, Canopy, Classic, Lorox Plus, Command, Scepter and Treflan have medium to high persistence and can pose a risk of carryover. The persistence of herbicides is directly affected by factors such as soil pH and moisture. To assess risks before planting, read the herbicide label or contact the manufacturer for specific information on persistence.

Planting Dates

Recommended planting dates range from late winter to late spring, and may include fall plantings. Most warm-season grasses are usually planted in the spring. Warm-season grasses need a soil temperature of at least 50 degrees F in order to germinate. If soil temperatures are colder than 50 degrees, or moisture is not adequate, the seeds will remain dormant until conditions are favorable.

Before deciding on the best planting date for a site, consider the need for weed control vs. the likelihood of having sufficient moisture for germination and growth of grass seedlings. Where weeds are likely to be a problem, planting in mid to late spring will allow more time for emergence and control of cool-season weeds before planting. On droughty sites, plantings made during late winter to early spring are more likely to have the soil moisture necessary for seedling establishment.

To obtain recommended planting dates for your area, contact your local NRCS Field Service Center.

Types of Seed

Many warm-season grasses (for example, little bluestem and broomsedge) have fluffy or chaffy seeds that are best planted by using a specially designed native grass drill. Native grass drills have picker wheels in the seed box that stir the seed and push it down into the large drop tubes.

Other warm-season grasses (for example, switchgrass and deertongue) have small, relatively "clean" seeds that can be planted by using a conventional grass drill or cultipacker-type seeder. A grain drill may also be used if it can be properly calibrated to plant small seeds at the recommended rate.

Warm-season grasses are sold in pounds of Pure Live Seed (PLS). PLS = (purity x germination)/100. PLS is important because native grass seed tends to be significantly lower in purity and germination than the seed of cool-season grasses.

Seed Availability

Seeds of many species may be available throughout the year, but supplies are usually best from late winter to early spring. Don't wait to buy seed until the day you are ready to plant. Local seed suppliers may not always have the species or varieties you want in stock, but may be able to order them for you. Or, you may need to order your seeds by mail or on the Internet. Contact your local NRCS Field Service Center if you need the names of suppliers. Store all seeds in a cool dry place before planting.

Using a Cover Crop or Nurse Crop

If erosion is a concern, use a cover crop or nurse crop of 20 to 40 pounds/acre of oats, barley, or wheat. Oats are the preferred nurse crop for warm-season grasses because they are less competitive than the other small grains. Plant the small grain as a cover crop at the higher rate in the fall prior to a spring planting of the grass-legume mix, or at the lower rate as a nurse crop along with the mix.

If erosion is not a concern, a cover crop or nurse crop can be planted at the lower seeding rate to help suppress weeds.

Planting Methods

Generally, the best method for establishing most plantings is to use a no-till planter to drill seed into existing cover (for example, into a cover crop, crop residue, chemically killed weeds or grasses, etc.). No-tilling into undisturbed soil greatly reduces the germination of annual weeds and minimizes erosion, especially where slopes are 6 percent or greater.

No-Till Planting into Plant Residue - On sites where existing vegetation was killed with herbicide or there is crop residue from previous years, no-till the grass-legume mix directly through the dead residue. Add a

nurse crop as needed to control erosion and/or suppress weeds. If you must work up the soil because the residue is too thick to plant through, it is strongly recommended that you use a cover crop or nurse crop.

No-Till Spring Planting into a Fall Cover Crop - In the fall, prepare a seedbed by working the soil with a plow, disk, or similar equipment. Continue tillage until a reasonably uniform seedbed is prepared. Then plant a cover crop. In the spring, no-till the grass-legume mix into the cover crop. (If the cover crop is tall, mow it first and no-till into the stubble.) If aggressive or noxious weeds have developed since the previous fall, use an appropriate herbicide to treat them before planting.

Broadcast Planting - If necessary, grass-legume mixes can be planted by broadcasting onto a conventionally prepared seedbed. Broadcast seed onto a well-prepared, firm seedbed. Grasses with small or fluffy seeds may need to be mixed with a filler (for example, sawdust, finely ground corn, or slightly moistened peat moss) to achieve an even distribution of seed. Incorporate the seed into the soil 1/8 to 1/4-inch deep by cultipacking, raking, or dragging. Broadcasting is usually less successful than no-tilling because it is more difficult to get good seed placement in the soil.

Lime and Fertilizer

Native grasses are much more tolerant of poor site conditions than most introduced grasses. It is usually not necessary to add lime to native grass plantings, provided the soil pH is 5.0 or above. A pH of 5.5 to 6.5 is ideal for most species.

Similarly, phosphorus (P₂O₅) and potassium (K₂O) should only be applied if a soil test indicates that these nutrients are in the low range. Remember that the use of commercial fertilizer and other forms of plant nutrients must be in compliance with Maryland nutrient management regulations, as applicable. For additional information, consult with your local Maryland Cooperative Extension specialist or certified nutrient management consultant.

Native grasses need very little nitrogen. Do not apply any nitrogen at the time of planting because it will only encourage weed growth.

ESTABLISHING THE PLANTING

Plantings of native grasses usually take two to three years to become fully established. During that time, weeds can be a major problem.

The goal of weed control is to reduce (but not eliminate) competition from broadleaf and grass weeds. Many of these plants provide good food and wildlife cover, but if they get too tall and dense, they will shade out the native grass seedlings. Don't wait until weeds are four feet tall before trying to control them. Mow-

ing them at that stage will produce so much plant litter that you may smother the seedlings.

For specific maintenance requirements, please refer to the maintenance schedule attached at the end of this jobsheet.

ESTABLISHING FALLOW BUFFERS

Site Preparation

Sites without Existing Vegetation - If the buffer will be established in a recently cropped strip, then no site preparation will usually be needed. However, a cover crop or nurse crop may be required for erosion control (see page 3), after which natural regeneration will be allowed to occur.

Sites with Existing Vegetation - If the buffer will be established in a strip that already contains one or two years' growth of desirable native grasses and broadleaf plants, then no site preparation will usually be needed.

If the buffer will be established in a strip that contains existing undesirable plants (for example, introduced grasses, or noxious or invasive species), you will need to remove them. If undesirable plants are tall and dense, or noxious weeds are present, first apply an appropriate herbicide and allow the plants to die before mowing and cultivating the site. If undesirable plants are few or scattered, a combination of spot treatment with an appropriate herbicide and/or light cultivation may be sufficient to remove them.

Follow all label directions when using herbicides, and consider herbicide persistence (carryover) as it may affect establishing desirable plants in a fallow buffer.

Types of Natural Vegetation in Fallow Buffers

Upland habitat buffers established by natural regeneration should consist of a mix of volunteer annual and perennial grasses and forbs (legumes and/or other broadleaf plants). Commonly occurring grasses that may occur in a natural regeneration wildlife buffer include crabgrass, foxtail, fall panicum, broomsedge, deertongue, switchgrass, and purpletop. Forbs may include asters, beggarticks, docks and sorrel, goldenrod, joe-pye-weed, partridge pea, Queen Anne's lace, mare's tail, and ragweed. Many of these plants are considered "weeds," but if managed properly, they will provide excellent wildlife food and cover.

Noxious weeds, aggressive introduced grasses (such as tall fescue and orchardgrass), and other aggressive introduced species are not acceptable and, if present, must be adequately controlled.

BUFFER BOUNDARY MARKERS

All CP33 buffers must be marked with permanent posts to control encroachment during cropping activities. Approved markers include 5-foot white fiberglass

rod posts, minimum 3/8-inch diameter (a type used for electric fence), and 5-foot heavy duty metal "T" or "U" fence posts, galvanized or painted, with anchor plates. Fiberglass posts are generally preferable to metal, due to their flexibility, better visibility, and lower cost. If broken, they are also less likely to damage farming equipment.

Install posts to mark the edge where the buffer meets cropland. Set all posts firmly in the ground. Posts must be installed on all corners, and spaced along the buffer so that they are visible from one marker to the next. On curves, posts should generally be placed a maximum of 100 feet apart. Where the buffer is straight, posts can be spaced farther apart. Intervals of up to 300 feet between posts are recommended on straight runs when 3/8-inch fiberglass or metal fence posts are used. Contact your local FSA Field Service Center for details concerning the availability of cost-share for approved markers.

MAINTAINING ESTABLISHED BUFFERS

CRP participants must maintain enrolled buffer practices for the life of the contract. "Maintenance" refers to activities that are carried out as needed to keep buffers in good condition so they will continue to function as planned.

Mowing is not an adequate means of disturbance for long-term management of quail habitat buffers, except as needed to facilitate prescribed burning or light strip disking. However, mowing may be useful in combination with herbicides to control woody growth and noxious weeds. For specific maintenance requirements concerning mowing and weed control, please refer to the "Maintenance and Management Schedule" attached at the end of this jobsheet.

MANAGING ESTABLISHED BUFFERS

Upland habitat buffers will need periodic prescribed burning or light strip-disking beginning at year 4 of the contract, then every 3 years thereafter. Please refer to the "Maintenance and Management Schedule" at the end of this jobsheet for detailed requirements concerning these practices.

If periodic disking and/or prescribed burning is inadequate to control the encroachment of woody species, selective herbicide application is permitted.

PROTECTING BUFFERS

Upland habitat buffers cannot be used as turn rows, farm lanes, or for storage of crops or equipment. Use fences and other exclusion devices as needed to keep livestock out of the buffer. Many types of fences and exclusion devices are available. Contact your local NRCS Field Service Center for recommendations for your site.

MAINTENANCE AND MANAGEMENT SCHEDULE FOR CP33		
Name:	Farm No.:	Tax Map:
	Tract No.:	Parcel:
Address:	Date:	Assisted by:
	Field(s):	Acres:
<p>Establishing a Grass-Legume Planting</p> <p><i>Planting Year</i></p> <ol style="list-style-type: none"> 1. Mow the planting as needed to control undesirable weeds. Nesting season restrictions on mowing do <u>not</u> apply during the establishment period. Don't let weeds get taller than 18 inches. Mow to a height of 4 to 6 inches or just <u>above</u> seedling height. Do not mow the seedlings! Discontinue mowing after early August unless you can set the mower high enough to stay above the seedlings. Using proper planting and management techniques, especially during the establishment period, will significantly improve plant vigor, reduce weed competition, and increase the likelihood of success. 2. Selective herbicides can be sprayed over the planting to control specific weeds. Herbicides are most effective when weeds are young and actively growing. Be sure to read and follow all label directions when using herbicides. Many warm-season grasses and wildflowers are Plateau-tolerant, but some are not. 3. Control noxious weeds (specifically, Johnsongrass, Shattercane, Canada Thistle, Bull Thistle, Plumeless Thistle, and Musk Thistle) as required by state law. If you need assistance identifying these weeds, contact your local NRCS Field Service Center; Maryland Cooperative Extension; or Maryland Department of Agriculture, Weed Control Section. <p><i>Second and Third Year After Planting</i></p> <ol style="list-style-type: none"> 1. Inspect the planting in early spring. If unwanted cool-season grasses or weeds comprise more than 25 percent of the stand, either treat with an appropriate herbicide or keep the area mowed very short until the warm-season grasses start to green up. (Note: While warm-season grasses are still dormant, Roundup can be used to kill unwanted cool-season grasses, but it will also kill desirable cool-season grasses such as the native wild ryes, and most legumes or wildflowers that are growing.) 2. Throughout the growing season, mow as needed above seedling height (about 8 inches or so) to keep weeds under control. Always avoid damaging the plantings during mowing and herbicide applications. 3. If weed pressure is very low, you can apply 40-60 pounds/acre of nitrogen to stimulate growth of warm-season grasses. Apply lime, phosphorus, and potassium only if soil tests indicate that they are needed (i.e., pH is less than 5, or P and K test results are in the "low" range). 4. Continue to control noxious weeds as required by State Law. 		
<p>Establishing a Fallow Buffer</p> <ol style="list-style-type: none"> 1. Allow the buffer to vegetate naturally with a mix of volunteer annual and perennial grasses and forbs. Unlike a planted buffer, the goal for fallow buffers is to establish "weeds" (except for noxious weeds), so mowing during the growing season is not needed to establish the buffer. 2. Control noxious weeds as required by state law. 		

MAINTENANCE AND MANAGEMENT SCHEDULE FOR CP33

Maintaining Upland Wildlife Buffers (Planted Buffers and Fallow Buffers)

1. Mowing is not an adequate means of disturbance for long-term management of quail habitat buffers, except as needed to facilitate prescribed burning or light strip disking. However, mowing can be used in combination with herbicides to control woody growth. Maintenance mowing, if needed, is permitted every 2 to 3 years, but not during the nesting season (April 15 – August 15). For optimum wildlife benefits, mow only 1/3 to 1/2 of the buffer each year. The remaining unmowed areas will provide year-round wildlife food and cover. The best time to mow is late winter to early spring, preferably in March. This will allow plants to provide protective cover for wildlife during the winter. On sites where soils are usually too wet in the spring, you can mow in the fall when soils are dry.
2. Periodic mowing for cosmetic purposes is prohibited at all times, and annual mowing for generic weed control is also prohibited.
3. Control noxious weeds and other invasive plants by spot treatment, using mechanical methods or approved herbicides. If it becomes necessary to control noxious weeds during the nesting season, contact your local weed control specialist concerning recommendations for spot-treating the weed problem. Spot treatment is limited to the immediate area of infestation. In an established buffer, you must request and receive approval from the FSA County Committee before spraying or mowing during the nesting season. For more information about controlling specific weeds, contact your local office of Maryland Cooperative Extension; the Maryland Department of Agriculture, Weed Control Section; or the Maryland Department of Natural Resources, Wildlife and Heritage Service.

Prescribed Burning

- Is a required management activity* *May be used in combination with light strip disking*
 Will not be used

This is the most effective management technique for removing accumulated plant litter and controlling woody plants in warm-season grass plantings. This CRP management activity consists of prescribed burning starting in year 4 of the contract, then every 3 years until the contract expires. Do not burn during the primary nesting season (April 15 - August 15).

1. Depending on the extent of the upland habitat buffer, the site may be divided into sections for burning in different years. If separated into 3 sections, you can establish a rotation of burning one section every year beginning in year 4 of the contract.
2. Prescribed burning requires a permit and may not be allowed in some areas. Contact your local office of the Maryland Department of Natural Resources, Forest Service, for current information concerning permits and assistance for this practice.
3. Prescribed burning requires the use of firebreaks that are usually 12 to 15 feet wide. Firebreaks can either be bare ground that is disked up just before burning, or a mix of cool-season grasses and/or legumes. Contact your local NRCS Field Service Center to obtain information about cool-season mixes for firebreaks.

MAINTENANCE AND MANAGEMENT SCHEDULE FOR CP33

Light Strip Disking

- Is a required management activity* *May be used in combination with prescribed burning*
 Will not be used

This CRP management activity consists of light disking starting in year 4 of the contract, then every 3 years until the contract expires. Do not strip disk during the primary nesting season (April 15 - August 15).

When performed correctly, light strip disking will:

1. Temporarily reduce the density of the existing vegetation;
2. Provide openings in the buffer for movement of quail and other wildlife; and,
3. Increase plant diversity by partially exposing the soil surface. This will encourage the germination of broadleaf flowering plants such as goldenrod, aster, annual lespedeza, and partridge pea. Broadleaf flowering plants provide good habitat for native pollinators. These insects and others also serve as important protein sources for adult birds and their young.

Location. Light strip disking can only be used on level or gently sloping areas of upland habitat buffers. Light strip disking may be used only if it will not result in excessive erosion or adversely impact water quality, and will not destroy the buffer.

Maintaining minimum cover. Before disking, mow the area that will be disked. Then lightly disk to leave a minimum of 50% plant residue remaining on the soil surface after disking has been completed. Disk a strip in one or two passes. Run disk gangs almost parallel to the direction of travel, and at a shallow depth of 2-3 inches. Do not use a heavy offset plowing disk. The purpose of light disking is to disturb the soil surface, not to prepare a conventional seedbed.

In order to maintain adequate vegetative cover, no less than $\frac{1}{4}$ and no more than $\frac{1}{2}$ of the buffer can be strip disked in any single year. However, no portion of the buffer shall remain unmanaged for greater than 5 years.

Width, spacing, and timing. Disked strips can be up to 20 feet wide, depending on the size of the buffer. They should be laid out on the contour to the extent feasible in an alternating pattern of disked and undisked strips. For best results, strip disk in late winter to early spring, preferably in March. This will allow the vegetation to provide protective cover for wildlife during the winter. On sites where soils are usually too wet in the spring, you can disk in the fall, beginning October 1, when soils are dry.

Minimum set-backs. In order to protect water quality, strip disking must be set-back at least 35 feet away from a watercourse, waterbody, or wetland. Because most upland habitat buffers will not be near riparian areas or wetlands, this usually will not be a concern.

Additional Recommendations: