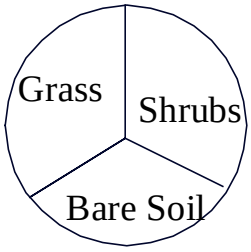
THE COVEY HEADQUARTERS

Volume 11 Issue 1 Spring 2012

This newsletter is aimed at cooperators and sports-people in Missouri to provide information on restoring quail. This is a joint effort of the Missouri Department of Conservation, USDA-Natural Resources Conservation Service, and University of Missouri Extension. If you would like to be removed from this mailing list or have suggestions for future articles please contact jeff.powelson@mdc.mo.gov or 816-232-6555 x122 or write to the address shown.



The name of this newsletter is taken from an old concept.....that a quail covey operates from a headquarters (shrubby cover). If the rest of the covey's habitat needs are nearby, a covey should be present. We are encouraging landowners to manage their quail habitat according to this concept. Use **shrubs** as the cornerstone for your quail management efforts. Manage for a **diverse grass, broadleaf weed and legume mixture and provide bare ground** with row crops, food plots or light disking **right next to** the shrubby area.

USDA to Hold Conservation Reserve Program Sign-up

USDA's Farm Service Agency (FSA) will hold a Conservation Reserve Program (CRP) general sign-up from March 12 through April 6, 2012. CRP is a voluntary program that helps agricultural producers use environmentally sensitive land for conservation benefits. Producers enrolled in CRP plant long-term, resource conserving covers to control soil erosion, improve water and air quality and develop wildlife habitat. In return, FSA provides participants with annual rental payments and cost-share assistance for establishment and management. Contract duration is between 10 to 15 years. Accepted contracts for CRP sign-up 43 will begin on Oct. 1, 2012.

Missouri has approximately 377,000 CRP acres expiring this year. If you have CRP acres set to expire this year, here are a few options you might consider:

Option One: Re-enroll
Consider re-enrolling your CRP contract. Don't worry if your current CRP soil rental rate payment is too low. There's a good chance the rental rate has improved since the last time you signed the CRP contract. Over the last five years FSA has adjusted CRP soil rental rates. Check with your local USDA Service Center to see what the new soil rental rates are. You may be pleasantly surprised.

Consider converting your CRP field to a quail-friendly mix. Back in the 1990's, some CRP fields were planted to a mix of "giant" native grasses and a pinch of wildflowers. Back then we thought more was better; so many grass seeding rates were around 8 to 12 pounds per acre. We've learned a lot over the last 10 to 15 years about establishing native grasses. Research has shown we can have good habitat and reduce soil erosion with much lower seeding rates (around 3 to 5 pounds of grass along with 3 pounds of native wildflowers per acre). Better seeding mixes are good for the landowner and good for wildlife.

Back in the 1980s and 1990s a lot of CRP fields in Missouri were planted to fescue or brome. Some were planted to a mix of orchard grass and annual lespedeza, which provided great habitat until the fescue and brome invaded the stand. Now these fields are a pure stand of fescue or brome. These fields are difficult to manage for quail because it is very hard to maintain good brood-rearing cover.

Instead of re-enrolling the current grass cover – whether it is warm-season or cool-season, consider replanting the field to a quail-friendly mix of little bluestem, wildflowers and legumes. Old CRP fields will need 2 to 3 herbicide applications to effectively remove the existing cover. Don't skimp on herbicide either. You'll pay for it in the long run with re-invading fescue or brome. During the current CRP sign up consult with your local wildlife biologist or Private Land Conservationist for recommended seeding mixes and conversion techniques. Converting to a quail-friendly mix may also improve your overall CRP score.

Consider converting 10% of your existing CRP into pollinator habitat blocks. Pollinator plots are great for butterflies, bees, and QUAIL! Establish these plots in blocks or long narrow bands adjacent to shrubby cover. These plots will provide bare ground and attract numerous insects needed by quail throughout the spring, summer, and fall.

Option Two: Take Advantage of Continuous CRP
Landowners converting their expiring CRP fields into soybean and corn fields or pasture should consider leaving field borders along the field edges and wide buffers next to streams and ponds. Landowners can enroll these sensitive areas into popular Continuous CRP practices such as CP21 Filter Strip, CP22 Riparian Forest Buffer and CP33 Habitat Buffer for Upland Birds. Landowners will still receive an annual soil rental payment and incentives for enrolling the margins of their fields into the Continuous CRP. In some cases the payment is higher because of sign up incentives. If necessary, they can even receive up to 90% cost share for establishing the proper vegetation.

Maintaining buffers around the edges of crop fields, not only provides great habitat for quail, but also takes marginally productive ground out of production. With high input costs and low yields it makes sense to keep field edges and buffers in CRP. Remember to "Farm the Best, Buffer the Rest!"

Option Three: Production with Wildlife in Mind
Some expired CRP fields may remain in grass for hay or pasture. Landowners can still take advantage of Continuous CRP practices if they plan on haying or grazing the field; however livestock will need to be excluded from the CRP buffer.

Landowners should also consider other conservation programs such as the Environmental Quality Incentive Program and the Wildlife Habitat Incentives Program to help them develop better grazing systems, create wildlife habitat and protect sensitive habitats. In Missouri, these programs provide cost share for installing a variety of practices. CRP fields might also qualify for the Grassland Reserve Program or Conservation Stewardship Program. Contact your local USDA Service Center for more information on these programs.

"Dormancy" is not a dirty word

John Murphy, Private Land Conservationist, Kirksville, MO

Those of us who manage habitats for ground nesting birds know the critical value of weedy, broadleaf-rich brood rearing cover. You are also aware that in a temperate zone like Missouri, keeping herbaceous cover in an open, broadleaf state is a real challenge; hence, the myriad of articles, guidelines, and technical resources to help you with management decisions about your grasslands and old fields. What if you had the decision power to maximize brood rearing broadleaf cover from the beginning; at the establishment of the stand of plants? We know that natural succession will eventually favor grasses over wildflowers, but why hamstring yourself by planting a mix that is "*destined for rankness*" by its seed rates and timing of planting. Often, if you are involved in a contractual program, seed rates are predetermined for you. Seed rates are a deep enough topic that warrants an article or two by itself, but for now, let's focus on how the timing of your planting can affect the outcome of your seeding.

At the outset, I offer the following parameters to our discussion:

1. We will examine the timing of seedings for native warm-season grasses and forbs (wildflowers). Introduced grasses and tame legumes fall under different parameters.

2. There is nothing inherently evil about a thick stand of grass, especially if your goals are bedding cover, winter roost cover, or erosion control…..but,
3. Thick stands of grass are inversely related to plant diversity and brood rearing potential.

Second year growth of a dormant planted grass/wildflower mix

In order to maximize forb success in your planting, think through how it happens naturally. If you have ever picked grey-headed coneflower in the fall, you realize that Labor Day is way too early, but after Halloween, the heads are mature. If that coneflower seed were to germinate as soon as it shattered in November, it would sprout and die in the ensuing winter; however, it doesn't emerge and die because it's designed with a triggering mechanism known as stratification. Stratification is nature's way of breaking seeds out of dormancy. Think of stratification as a sort of "biochemical defibrillation" to shock the seed into germinating. For forbs, this often requires a damp environment with temperatures that fluctuate in the high 30's over a period of time. Forb seed dormancy is explained as two-fold: a physical dormancy in the form of the seed coat, and a chemical dormancy in the endosperm. Both of these seed features need stratification as a kick start. With the wide array of forb species, comes a wide array of timing. Research at Oklahoma State University showed specific stratification needs for certain forbs. They showed that optimum germination for Purple coneflower (*Echinacea purpurea*) was highest after 4 weeks of stratification, while Maximillian sunflower (*Helianthus maximiliani*) showed the greatest germination percentage up to 10 weeks of stratification.[i] In another study, several *Penstemon* species germinated far better with stratification times of up to ten weeks, even with seed that was several years old.[ii] That's not just time in the ground, but time in the ground with a specific range of moistures and temperatures to flip the switch for germination.

Now let's think back to our coneflower seed. It is poised in the first ½" of soil, and it needs several weeks of temperatures that get into the 30's. What are the odds it will get that needed blend of moisture and temperatures if we drill our mix in the end of May? Not very likely in Missouri. In fact, much like getting stood up on prom night, it will have to sadly sit there and hope for next year. Even if this despondent seed makes it through summer, fall, and winter, come spring, it's now the runt of the litter competing for light and resources with vigorous grasses that got a head start the previous year. We humans can bolster the odds of forb germination by artificial stratification and roughing up the seed coat (scarification) before we plant in the ground, and we can have good success, particularly with legumes, if the competition from grasses is minimal. But to quote the song, "Ain't nothin' like the real thing, baby."

Planting warm-season grass and forb mixes in dormancy (late fall into early spring) allows proper stratification for your wildflower species, even when it's a diverse blend. Some will germinate earlier, some later, but all should be in position to grow and compete either before or at the same time as your grasses. Eliminating that head-start for grasses is what gives a dormant planting a longer turnaround time before the grasses get too heavy and shade out the forbs. To prove that point, the Natural Resources Conservation Service's (NRCS) Plant Materials Center, located in Elsberry, Missouri published results from a three year study on how seeding dates affect competition between grasses and wildflowers.[iii] The study examined density of plantings from 2003 through 2005. And they compared seedings planted in dormancy (mid-winter) to those planted in spring (May). The researchers found that the forb component was considerably higher in stands that were planted during dormancy than those

planted in the spring. Conversely, after three years, spring planted stands had almost twice the population of grasses than dormant plantings.

Herein lays the take home message: **dormant seeding favor forbs, spring seedings favor grasses**. If you plant a mix in the winter, do not expect a robust stand of grasses for quite some time. In fact, if your objective is a quick turnaround in grass to address erosion issues, plant in the spring. Conversely, dormant seeding your forbs is not just a "gimme" either. Remember, competition is fierce in a new planting. Many of the common perennial forb species in Missouri have extensive root systems, so many of their initial resources are spent growing down before they ever focus on above ground material. Beware of the winter annual "cheaters" that like this growing environment as well, with marestail being one of them. It has been my experience with dormant plantings that rotary mowing for establishment is a must the following spring! When the weed canopy reaches 12 inches tall during the first growing season (typically June), mow the entire planting to a height of 6 inches. Mow frequently to avoid letting weeds get too tall. If you wait too long to mow, the clippings may smother your new seedlings.

Planting requirements in dormancy are really no different than the spring. Ideally, you want a clean, firm seed bed. Soybean stubble is an ideal substrate. Imagine the looks I have gotten unloading a no-till drill on North Missouri tundra in January. I have been asked a hundred times, "Aren't you going to tear up your coulters?" Seed depth is no different in January than in May, it needs to be shallow. If you bury warm-season grass and forb seed too deep any time of the year, it will fail. Use a drill to just meter the seed out on exceptionally shallow furrows (1/4" – ½"). In fact, semi-frozen ground helps heavier drills to not sink too deep. However, you would be wise to slow your tractor down over frozen ruts. Broadcasting can work well if the seedbed is very clean. You need to maximize seed to soil contact. This can be done by putting the seed on immediately before a snow or by using a roller over the top to even the distribution.


Dormant seeding into bean stubble.

Some of these methods are still considered unconventional, and have only gained momentum in the past 10 years, but we already know how to grow warm-season grasses. The more we discover about the "holistic" needs of wildlife, it becomes more apparent to look at the big picture, and adjust our practices accordingly. If you have a native planting on your schedule, and want to maximize diversity for wildlife, consider seeding in dormancy, and let the seed perform as Nature designed.

[i] **Stratification Improves Seed Germination of Five Native Wildflower Species:** Bratcher, C.B., Dole, J.M. Cole, J.C. HortScience 28(9):899-901. 1993.
[ii] **Influence of Seed Stratification and Seed Age on Emergence of Penstemon:** Lindgren, D.T., Schaaf, D.M. HortScience 39(6):1385-1386.2004.
[iii] **Compatibility Study Using Native Warm Season and Cool Season Grasses with Native Legumes and Forbs:** Bruckerhoff, S.B. PMC2006 Annual Technical Report. Elsberry, MO.

Quail 7 National Symposium **Max Alleger, Grassland Bird Coordinator, Clinton, MO**

Quail 7, the latest in the series of national quail symposia, took place from January 9-12, 2012 in Tucson, Arizona. Representatives of most state agencies and quail NGOs, as well as researchers from many

universities and quail study sites attended. Below are highlights from posters and presented papers which have relevance to Missouri.

Research Findings, Presentations & Posters

A study conducted by the University of Tennessee used imprinted quail chicks to compare invertebrate availability among 60 Conservation Reserve Program (CRP) plantings. Ants and pill bugs were most commonly selected. Invertebrate consumption was greater on CRP tracts receiving a mid-contract management herbicide treatment than on untreated fescue plots. Chicks foraging in disked CRP consistently consumed the highest invertebrate biomass. Using human-imprinted quail chicks as a means of measuring insect abundance is increasingly seen by some researchers as a superior method to vacuum collection for determining invertebrate abundance and diversity.

A Mississippi State University study found that Bermuda grass holds significantly more heat than other available cover types. The lethal temperature threshold of 40°C was exceeded on 87-percent of August days in Bermuda grass monoculture. Bermuda grass impeded the mobility of <5 day old chicks, but apparently did not impact those >10 days old.

Findings from a study of spring dispersal within agricultural landscapes in Ohio may have relevance in Missouri. The take-home point, as might be expected, is that birds move less in better habitat. However, observed dispersal patterns suggest that quail are capable of recolonizing improved habitat. Covey breakup and breeding behaviors were observed by early April; movement and dispersal data reported includes:

- Mean winter home range size was 577 meters in diameter
- Mean distance moved during spring dispersal was 1.5 Km; (42% of birds did not move; 23% moved 1-2x the winter home range size; 35% dispersed more than 2x the winter range size and 19% dispersed well beyond - averaging a move of 5.2 Km.
- Dispersal was greatest within four forested sites.

A Texas study of coyote food habits in mesquite dominated mixed/short grasslands indicates that this canine may get a bad rap where quail predation is concerned. Analysis of 720 coyote scats identified the most common food items as rodents, soft mast, insects, grasses and feral hogs. Quail were near the bottom of the list with acacia fruits. Coyotes in this study consumed many more potential quail predators than quail. Fruits appear to be an important buffer against coyote predation upon quail.

A Texas study of mammalian predators conducted during nesting found that coyotes search grassland habitats much more thoroughly than raccoon. Female and juvenile raccoon have small home ranges and avoid open grasslands. Adult male raccoons have a larger home range than coyotes, but search grasslands with shrubs or cactus much less thoroughly. Quail feeders were a significant attractant for male raccoon, which frequently, ‘camped’ within 50 meters.

A comparison of monitoring methods in south Texas (Parent, et. al.) found whistle counts to be more indicative of fall quail abundance than the number of males observed via visual sampling protocols. Also, the total number of chicks observed was more indicative of fall abundance than the total number of adult birds.

Distribution of Nesting Time

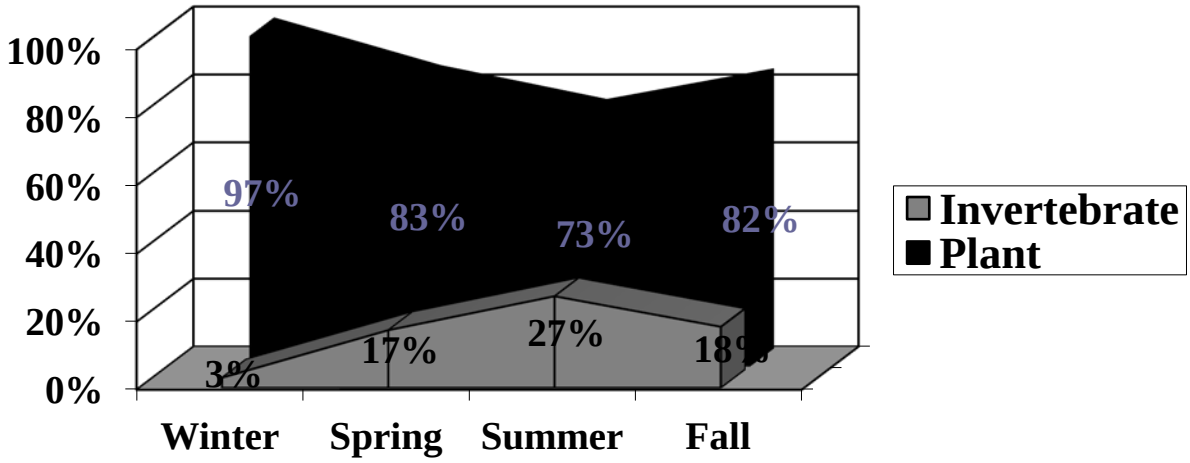
Jeff Powelson, Private Land Conservationist, St. Joseph, MO

Every wonder how long it takes a bobwhite quail to hatch? Well it’s more than just the egg we are talking about. A successful nest goes through several turn of events. Not only does the hen have to select a secluded nesting site, but she must be able to withstand all things that Mother Nature can throw at her. The bobwhite quail has a very long nesting season that runs from April through September and some evidence has been shown that hatching has occurred as late as October. The mating behavior of the bobwhite quail is very intense. This event starts after the covey breakup in late winter/early spring. Usually around the month of April you will start to hear the calling of the male bobwhite with the sound of the BOB-WHITE whistle, one of nature’s most recognizable sounds. Nest development starts after the

hen bobwhite has mated. This can take up to 5-7 days until the first egg is laid. Since the average clutch is 12-18 eggs per nest, another two to three weeks have past. Incubation does not start until after the last egg is laid and there is typically a short interval of time between the last egg and the start of incubation. Once incubation is started the hen will not leave the nest except for essential survival needs. Incubation will take 23 days before hatching begins. All of this activity will take a time lapse of 44 to 55 days to complete for both the hen and eggs to be successful. With such a large window of nesting activity, it is extremely important to maintain areas of undisturbed nesting cover throughout the summer.

Quail Food by Season

The graph below is a general representation of how quail diet changes through the season. Notice the heavy insect requirement that begins in spring and peaks in the summer. Quail chicks require 80-95% insects during their first few weeks of life. Good reproduction by quail is dependent on high-protein foods. Commonly eaten insects include beetles, leafhoppers, spiders, grasshoppers, ants, crickets, stinkbugs, flies, and snails. Disking and prescribed burning grasslands in early fall will promote ideal brood habitat the following summer.



Quail Forever Hires Three Farm Bill Wildlife Biologists in Missouri

Biologists represent the organization's initial Farm Bill Wildlife Biologists in the "Show Me State"

Pheasants Forever and Quail Forever are pleased to announce the addition of three new Farm Bill Wildlife Biologists in Missouri. These new biologists will work with area landowners and farmers to implement wildlife habitat conservation measures aimed at increasing quail and other wildlife populations. These positions were made possible through a partnership with Pheasants Forever and Quail Forever, the Natural Resources Conservation Service (NRCS), and Missouri Department of Conservation (MDC).

"Missouri was once the premier quail hunting state in the country, and through Quail Forever and our partners, it is now the premier state for bobwhite quail restoration," said Elsa Gallagher, Quail Forever Regional Wildlife Biologist. "Ryan, Scott and Andrew have already made some major positive impacts in their respective communities for Missouri bobwhite restoration, and we are looking forward to what they accomplish for Missouri upland wildlife in the years to come."

Pheasants Forever and Quail Forever Farm Bill Wildlife Biologists work to provide technical assistance to farmers and ranchers—through one-on-one consulting—regarding the benefits of conservation programs (such as the Conservation Reserve Program). By working with landowners to develop and implement individual wildlife management plans, these biologists represent the organizations' on-the-ground efforts in ensuring landowners are aware of conservation program options. Pheasants Forever initiated the Farm

Bill Wildlife Biologist Program in 2003 with 4 positions, and it has since grown to over 100 partnership positions located throughout the country.

Ryan Diener will be located in the Franklin County USDA Field Office in Union. Diener is a native of Missouri, and he received his Bachelor of Science degree from the University of Missouri. Since that time, Diener has been working as a Farm Bill Wildlife Biologist for Pheasants Forever in Oberlin, Kansas. He is an avid hunter and outdoorsman and is involved with several professional and conservation organizations. Diener will start in early April. He can be contacted at (636) 299-1140 / Email Ryan.

Scott James will be located in the Scott County USDA Field Office in Benton. James is a native of Illinois, and he received his Bachelor of Science degree from Southern Illinois University. Since that time, James has been a waterfowl research technician on two projects in North Dakota, and in the bootheel of Missouri. James recently completed his contract with the Army National Guard, where he served time overseas. He has been interested in wildlife conservation work since childhood. James started work on February 27th and can be reached at (573) 545-3593 / Email Scott.

Andrew White is located in the Livingston County USDA Field Office in Chillicothe. White is a native of Missouri, and he received his Bachelor of Science degree from Lincoln University in Jefferson City. Most recently, he worked for the Missouri Department of Conservation in the Private Land Services Division, as well as the Protection Division. White is also an active volunteer for the Four Rivers Quail Forever chapter. White started on February 21st and can be reached at (660) 646-6220 / Email Andrew.

"We want to thank the Missouri Department of Conservation, NRCS, our chapters and the rest of our partners who made these positions possible," said Steve Riley, Pheasants Forever and Quail Forever Farm Bill Biologist Coordinator. "Partnership positions like these are the key to restoring America's favorite game bird to Missouri's rural countryside, and the Farm Bill Wildlife Biologist Program has a proven track record of putting quality habitat and wildlife on the ground."

The Farm Bill Wildlife Biologists are employees of, and supervised by Quail Forever, with daily instruction and leadership provided by NRCS and MDC. Funding is provided by NRCS, MDC, Quality Deer Management Association and local QF chapters. The biologists jumped into their new jobs while at National Pheasant Fest & Quail Classic 2012, held in February. Staffing the show's Landowner Habitat Help Room, they helped 282 landowners with their wildlife habitat planning on over 120,000 acres.

Spring Covey Headquarter Calendar

March

For quail, **DO NOT BURN** native warm-season grasses after March 15
Spray actively growing fescue and brome in your shrubby cover before bud break
Plant shrubs for quail now through May
Burn cool-season CRP March 15 – April 30
Complete forest stand improvement and edge feathering work this month

April

Burn fescue and brome to severely stunt grass, then strip disk and interseed legumes
Listen for bobwhite whistle calls on clear calm mornings
Till and fertilize food plots

May

Bobwhites begin nesting – **DO NOT MOW nesting cover now through August**
Conduct breeding bird surveys late May through June
Clip weeds in newly planted warm-season grasses to a height of 4-6 inches

Mark Your Calendar

Quail and Small Game Management Workshop – Tuesday, April 3, 2012 from 6-9PM at Crowder College in Newton County. Reservations are required; contact Mike Petersen, 417-847-5949 ext. 22

Food Plot Seeding Rates

Food is seldom a limiting factor to having bobwhites on your farm. Make sure you have adequate herbaceous cover (diverse grasses, legumes, wildflowers and weeds for nesting, feeding, brood-rearing and roosting), and shrubby cover before planting food plots.

Species	Broadcast seeding rate (lbs./acre)	Planting Time
Grain or Forage Sorghum	16 lbs.	May – early June
Corn	15 lbs.	April – early May
Millets	20 lbs.	April – June
Buckwheat	40 lbs.	May – June
Soybeans	45 lbs.	April – May
Oats	50 lbs.	Fall – early spring
Wheat	50 lbs.	September – early November
Sunflowers	8 lbs.	April – early June
"Bobwhite" trailing soybeans	8 lbs.	April – May

- **Rates can be reduced 50% for planting or drilling, except for soybeans, which can be reduced to 34-40 pounds/acre.**
- **Fertilize grain plots according to soil test. In the absence of a test, consider adding 150 pounds of 12-12-12 fertilizer per quarter acre of food plot**

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