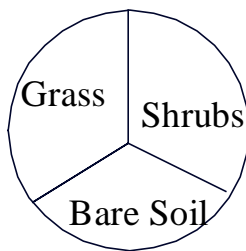




# THE COVEY HEADQUARTERS

Volume 17 Issue 2 Summer 2018

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](mailto:jeff.powelson@mdc.mo.gov) or 816-232-6555 x5772 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.

## Ingredients for Quail Management Success

David Hoover, Small Game Coordinator, Missouri Department of Conservation

I have been asked several times "what is the recipe for quail habitat?" My general response is "there is no standard recipe that fits every management scenario." Each property has its own set of challenges and opportunities. However, quail habitat has some very basic and fundamental elements that can be established on nearly any property.

Quail use cover according to 3 basic requirements for survival; nesting and brood-rearing, escape and thermal protection, and roosting. Where ideal habitat conditions exist, it is very difficult to distinguish between nesting, brood rearing, and roosting cover, as they are essentially one in the same – this should be the goal of any quail manager. An area of habitat with as little as 10-15% grass cover is adequate for nesting. Too much grass cover is detrimental for brood rearing, as the chicks are often not able to navigate the thick stand of grass as the adult searches for favorable brood cover. So, the image of a field with a solid stand of native or wildlife-friendly cool-season grass serving as nesting cover should be replaced with one of a field consisting of very little to modest grass cover distributed throughout with the balance of cover consisting of a wide variety of forbs (broad-leaved plants) and bare ground. This will provide ample nesting opportunities with brood cover just a short distance in any direction.

Protection from the elements, both winter and summer, and predators is another very basic habitat requirement for quail. Dense, low growing woody cover (less than 12 feet tall) open at ground level is ideal. The purpose of having good woody cover for quail is often solely associated with escape cover to avoid predators, particularly during the fall and winter months. However, adequate woody cover also serves as important thermal cover, protecting quail from excessive heat during the summer and extreme cold and snow in the winter. Ideally, patches of suitable woody cover should be at least 300 ft<sup>2</sup> in size and distributed such that no point in the field is greater than 50 yards from woody cover.



*Nearly ideal cover providing both nesting and brood rearing. Notice the scattered clumps of woody cover, making this field almost 100% usable by quail.*

Roosting cover is essentially the same as good brood-rearing cover. When both chicks and adults are feasting on soft-bodied insects and succulent plant material, it is brood-rearing cover while the rest of the year it supplies them with an ample seed source. At night, quail will use this same type of cover to roost, as it provides very little impedance if they need to escape predators.



*Ample bare ground and an abundance of forbs makes this ideal brood cover as well as potential roosting habitat.*

So, in a nutshell, I have just described the ideal habitat conditions for quail, i.e., diverse herbaceous cover dominated by forbs with well-distributed low growing woody cover throughout. In general, the more suitable habitat there is available, the better the quail numbers. In many situations, however, i.e., working farms, it is simply not practical, or feasible to devote large acreages solely to quail habitat management. In these situations, the objective should be to establish as much of this ideal habitat as possible. As I

stated earlier, there are opportunities to improve quail habitat on most properties, assuming there are quail in the “neighborhood.” In a recent study conducted in the intensively-farmed Mississippi alluvial valley, a small change (6-7%) in primary land use resulted in a notable quail population response.

These habitat improvements could include establishing diverse native field borders and buffer strips, managing whole CRP fields to create the appropriate plant structure and composition, converting 25-30% of pastures to native forages and practicing conservation grazing, and converting unproductive odd or idle areas of the property to native herbaceous cover. To ensure adequate woody cover is available, practices such as edge feathering, establishing downed tree structures or brush piles, or woodland restoration should be implemented near the diverse herbaceous cover. This formula will provide for the 3-major habitat requirements of quail, i.e., nesting and brood rearing, escape and thermal cover, and roosting.



*Native crop field borders provide critical quail habitat in intensively farmed landscapes. Using native plant species also benefits many other bird species.*

Don't get caught up in all the numbers of quail management. Create as much of the ideal cover conditions as possible, or feasible, on your property by whatever methods are available and maintain with periodic disturbance (burning, grazing, disking, etc.). Although there is not one standard recipe to achieving quail management success, there is no doubt that the key ingredients are well understood.

## **Summer Covey Headquarter Calendar**

### **June**

Begin spraying actively growing Johnson grass.

Mow newly planted native grass stands to a height of 6-8 inches for weed control.

Conduct breeding bird surveys now through early July.

Contact MDC or NRCS for burn plan assistance.

Seed milo, millet, and forage sorghum food plots.

### **July**

Spray sericea lespedeza now through September.

Mow newly planted native grass stands a second time to a height of 6-8 inches for weed control.

Excessive June and July rains shifts peak quail hatch to August.

## **August**

Till firebreaks to prepare for prescribed burns.  
Mow or burn fescue to prepare for fall herbicide treatments.  
Continue to treat sericea lespedeza through September.  
Re-nests and second quail broods hatching – do not mow idle areas.

## **Mark your Calendar**

**Native Warm Season Grass Grazing Workshop** – July 13, 2018 from 9am – 3pm The field day will take place at 249 Route O, Everton, MO. RSVP by February July 6<sup>th</sup> Contact Landry Jones (417)326-5189 ext.1848

### **Classroom Topics Include(9am-11:30am):**

- Biological and Management Differences Between Warm Season and Cool Season Grasses
- Animal Performance Grazing Warm Season Grasses
- Economic Benefits of Incorporating Warm Season Grasses
- How Grazing Can Benefit Wildlife

### **Dade County Farm Tour (1pm-3pm):**

- Grazing Management Techniques
- Benefits of Incorporating WSG into Grazing System
- Lessons Learned

## **What Has the Southwest Missouri Quail Study Taught Us About Predators?**

**Kyle Hedges, Wildlife Management Biologist, Missouri Department of Conservation**  
**Frank Loncarich, Wildlife Management Biologist, Missouri Department of Conservation**

As biologists and quail managers we rarely have a discussion about quail where the role of predation is not brought up. It is clear that predation is the leading cause of quail mortality in Missouri before and after hatching. What is not clear is how predation varies by landscape type and management and how landscapes can be modified to mitigate the impact of predation to maximize quail numbers.

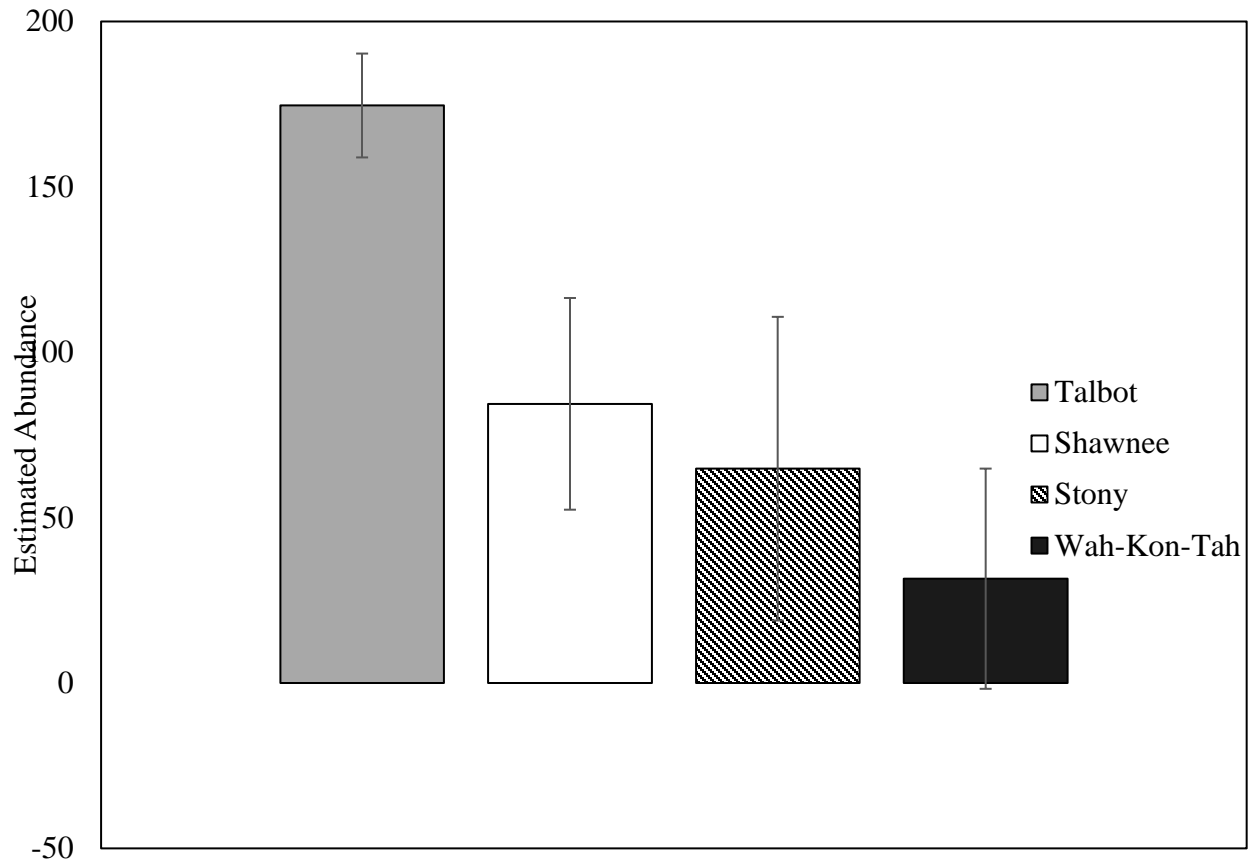
We have reported many results from the Southwest Quail Ecology study in past issues of this newsletter. Most of those reports have been about nest success, adult survival, and nest timing. However, we have some new and pretty exciting data we'd like to report on a study we did, as part of the larger quail study, looking at nest predator abundance and movements. This study was completed as part of a Master's thesis by a student from the University of Arkansas and represents the first study of its kind in Missouri.

As a bit of review, remember that we are comparing quail ecology on large grasslands managed with fire and grazing versus landscapes that are managed in a more traditional manner with strips of food plots, nesting cover, and shrub plantings; the typical public-land quail management approach. The study sites are all public land and include: Talbot Conservation Area (CA) (traditional), Shawnee Trail CA (traditional), Stony Point Prairie CA (grassland), and Wah' Kon-Tah Prairie CA (grassland). We are finding some very compelling results that seems to indicate that quail nesting success and survival is better in the larger, more open grassland landscapes.

Why is this? In an effort to help answer this question we decided to look at the predator component on the disparate landscapes to see if we could get a sense of how predator abundance compared on each site and if landscape composition affected predator movements and the probability of encountering a quail nest. To answer the abundance question, the student trapped and marked raccoons and opossums

on 2 grassland sites and 2 traditional sites. He then used game cameras to “recapture” these marked animals. By comparing the proportion of marked individuals to unmarked animals he derived an estimate of abundance and density of nest predators at each site. We hypothesized that nest predator abundance and density would be higher on the more fragmented, traditional study sites. Results indicated that indeed, abundance was higher on the traditional study sites (Figure 1.).

Figure 1. Raccoon and Opossum Abundance per Study Site



Talbot CA also had the highest density of raccoons of all the study sites (Table 1.) Stony Point Prairie CA had the second highest density of raccoons but that was a function of raccoons from the wooded private lands surrounding Stony Point. That confirms that the landscape surrounding a management area can result in negative impacts to the management area itself. The Stony Point raccoons spent over 70% of their time on the private land surrounding Stony Point, whereas the Talbot raccoons only spent 40% of their time on the surrounding private land. Our results also show that more tall trees on the landscape creates better conditions for nest predators, particularly raccoons.

Table 1. Raccoon Density Estimates for Each Study Site and Percent of Forest Cover on Each Site

Area	Raccoons/km <sup>2</sup>	% Forest
Talbot	9.9	22
Shawnee Trail	5.6	3
Stony Point	7.2	4
Wah' Kon-Tah	2.6	2

Abundance and density of nest predators only tells part of the story. We wanted to know how these nest predators moved across the landscape and how the structure (level of fragmentation by tall trees) of each study site affected potential for nest predators to encounter quail nests. To answer these questions, we attached GPS transmitters to a select number of raccoons on Stony Point Prairie CA and Talbot CA and followed them over the course of a quail nesting season. What we found was not unexpected, in our minds, but hammered home the importance of having landscapes as free from tall trees as possible when managing for quail. Results showed that raccoons strongly avoided the open grassland areas on Stony Point Prairie. The grasslands at Stony Point are very open, with essentially no tall trees and raccoons travelling in these grasslands would be highly susceptible to predation by coyotes or bobcats. Raccoons at Talbot CA, on the other hand, used grasslands on the area much more frequently, presumably because there are tall trees scattered around that would allow raccoons to escape from predation. We also found that raccoons on Talbot travel further out into grassland areas than do those at Stony Point, and based on where our radio-collared birds are nesting, raccoons at Talbot are also much more likely to encounter quail nests than those at Stony Point (Table 2.). We found that 50% of our tracked quail nests are located within raccoon travel corridors at Talbot versus only 27% of nests at Stony Point. That is significant!

Table 2. Raccoon Movement and Potential to Encounter Quail Nests.

Area	Average Distance Travelled from Mature Woody Cover (m)	% Nests Within Raccoon Travel Corridor
Talbot CA	76	50
Stony Point CA	40	27

So, what do our findings mean to landowners that want to maximize quail abundance on their land? The biggest take away from this research is that tall trees in a management area and forested areas nearby create better conditions for nest predators and greater potential for nests to be located by predators. Nests predators are simply more abundant in areas with a significant forest component and tall trees in a grassland landscape allow nest predators the ability to hunt further into grasslands because they face less risk of predation themselves. Our findings suggest that landowners need to work to cut down as

many tall trees as possible, in their management areas, to reduce the probability that nests will be discovered by predators. Equally as important is that landowners work to break up fragmentation or tall woody cover connectivity on their property. We also found that landscape composition of neighboring land matters with respect to predator abundance. While landowners may not be able to change the management on their neighbors, they can work to remove any tall woody cover that connects their properties. This will eliminate potential nest predator travel corridors. Anything that landowners can do to reduce the amount of time that nest predators spend in nesting habitat is critical to maximizing quail numbers.

Our research has really opened our eyes as quail managers and has caused us to rethink how we manage quail populations on public land. It has also provided key insights on how private landowners might approach quail management to maximize populations on their lands. This new nest predator information likewise adds to our knowledge of how predator numbers vary according to landscape composition and helps us better decide where to put our limited management time and dollars.

## TEASEL CONTROL



Both common teasel (*Dipsacus fullonum*) and cut-leaved teasel (*D. laciniatus*) are herbaceous biennials or short-lived perennials that were introduced to North America in the 1700s and are currently found in Missouri. These invasive plants are closely related. Therefore, the information in this article applies to both species. Common teasel was used in raising the nap on wool and other fabrics. Teasel has also been used in horticultural plantings and dried floral arrangements. Cut-leaved teasel was introduced with common teasel or perhaps brought into the United States accidentally with other plant material.

Teasel grows in open, sunny habitats in wet to dry conditions. Teasel is most commonly found in disturbed areas, including roadsides, railroads, and sandbars in streams. Teasel populations have flourished in the last 20 years due to late summer mowing along Missouri's highways. The potential exists for teasel to invade lightly managed grasslands, as well as high-quality natural areas.

Teasel grows as a basal rosette of leaves for a minimum of one year. Teasel usually produces a flowering stalk in its second year, and dies after flowering. During the rosette stage, leaves are oval and toothed. Older rosettes become hairy and develop a large

taproot up to 2 feet long. Leaves on the flowering stems are large, opposite and joined into a cup around the stalk. Rigid stems and leaf midveins contain short prickles. Flowering stems may reach 5 to 7 feet.

Cut-leaved teasel normally has white flowers from July to September, while common teasel produces purple blooms from June to October. Stiff, spiny, leaflike structures called bracts curve up from the base of the flower head. A single teasel plant produces more than 2,000 seeds, which remain viable for several years. The seeds disperse in close proximity to the parent plant, but can be transported longer distances by water or on mowing equipment.

### Impacts

Individual plants can produce many offspring, due to their abundance of seed that readily germinates. Dead adult plants leave a relatively large area of bare ground allowing the seed an optimal site for germination. If left untreated, teasel quickly can form dense monocultures that outcompete and exclude other vegetation. Spread is aided by disturbance or bare ground. However, teasel is so aggressive that it

can invade and displace native plants within high-quality prairies and savannas, as documented in other states.

### **Control**

To control small populations, young rosettes can be dug or pulled from moist soil. Plants can also be cut at, or just below, ground level immediately before flowering to prevent later re-sprouting and flowering. Immature seed heads can still produce some viable seed so all flower heads should be removed and destroyed.

The most effective treatment is with foliar-applied herbicides. Broadleaf herbicides are preferred over nonselective herbicide to minimize effects on nontarget plants. The rosette should be treated during the growing season prior to flowering stem development to eliminate the risk of seed production. Application during early spring will result in less harm to non-target species. Herbicide choice depends upon the location of the plants in proximity to aquatic resources and surrounding native vegetation. Effective herbicides include glyphosate, triclopyr, 2,4-D, clopyralid, aminopyralid, metsulfuron and imazapic. Teasel rosettes remain green into the fall and early winter, allowing for dormant season glyphosate application. Because the plant needs to be actively photosynthesizing for herbicide uptake, dormant-season foliar treatments have had mixed results.

Prescribed burning or mowing prior to spraying may be used to reduce other vegetation and expose teasel plants. However, these control methods are ineffective if used alone. Eliminating a teasel population is a multiple-year effort regardless of treatment, since viable seeds persist in the soil for several years.

UNIVERSITY OF MISSOURI  
 Extension

   
United States Department of Agriculture  
Natural Resources Conservation Service



Equal Opportunity Provider and Employer

This institution is an equal opportunity provider

The Covey Headquarters Newsletter  
3915 Oakland Ave  
St. Joseph, MO 64506

RETURN SERVICE REQUESTED