



INSET PHOTO BY TES RANDLE JOLLY

Fringe Benefits

Research reveals that your food plot's edge provides resources for a diversity of species beyond whitetails.

By Will Ricks and Dr. Karl V. Miller

Over the past few years, numerous articles in *Quality Whitetails* have discussed the importance of food plots and have provided technical advice to landowners. In 2006, *Quality Food Plots* was published and provided readers with information ranging from the importance of food plots to ways to implement food plots on their own properties. Given that a single food plot planted in perennial clover can produce in excess of one ton of forage per acre per month at peak production, the value of food plots to deer is unquestionable.

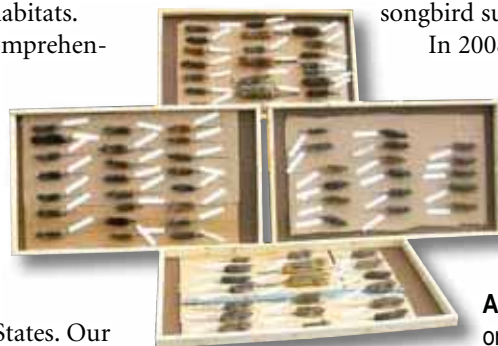
Despite the clear benefits to deer, many managers, including some biologists, have questioned the impacts of deer food plots on other wildlife species. Some have even suggested that food plots may have negative impacts on some songbird populations, particularly in forested habitats. However, to date there has never been a comprehensive study to address the impacts – positive or negative – on other wildlife.

In an effort to answer these questions, the University of Georgia and QDMA began a study in 2008 to identify the impacts of food plots on non-game wildlife, particularly breeding songbirds, wintering songbirds, and small mammals in several states across the eastern United States. Our

goal was to provide managers with scientific information that will enable them to balance deer management techniques with the habitat requirements of nongame species. If our goal is to truly develop “Leopold Landscapes,” we must consider all the potential effects of our management activities.

Our study was conducted at 20 sites in the Southeast (Georgia and Tennessee), and 20 sites in the Northeast (New York and Pennsylvania). In these areas, we selected food plots ranging from 0.3 acres to 7.3 acres, and all were planted in perennial clovers. Some plots also had a forage green, such as chicory along with the clover. All locations were in the Appalachian Mountains and were surrounded by closed canopy hardwood forests. A subset of 10 plots in North Georgia was used for the winter songbird surveys.

In 2008 and 2009 we conducted breeding bird



Left: More than a dozen species of small mammals were found in abundance around food plots in this study. Dr. Mike Shaughnessy along with technicians Meghan Bartz and Kim Waldner-Reid helped Will Ricks capture and prepare these study skins for research.

Above: Will Ricks records species of birds he sees or hears at a food plot site in the study.

counts in May on the southern sites and June through July on the northern sites. We also conducted winter bird counts on a subset of 10 southern plots during January through March of 2009. At each location, we recorded songbirds seen or heard over a five-minute period at three positions. The first was located at the center of the food plot, the second was located at the food plot's edge, and a third position was located 125 meters into the adjacent forest. Each of the food plots was surveyed four times during each breeding season and 10 times during the winter season. During the study we completed 1,400 breeding bird point counts, and 500 winter bird point counts.

Working with Dr. Mike Shaughnessy at Dickinson State University, we also sampled the small mammal populations (mice, shrews, etc.) within each of these subplots by overlaying a grid of 125 snap traps along the bird survey routes at each food plot.

For both the avian survey and the small mammal survey, we evaluated both species richness and abundance within the plot, at the plot edge and in the adjacent forest. Species richness is simply the total number of different species detected, whereas species abundance is the total number of birds (or small mammals) detected.

Songbird Results

Over the course of our two-year study, we detected 2,877 individual birds comprising 100 different species. In the northern sites, species abundance during the breeding season was similar among the food plot, edge, and forest point counts (see the table at the top of this page). However, we detected greater species richness in the food plot than in the forest. In total, we detected 1,715 individuals and 84 species in the northern sites. Red-eye vireos, eastern towhees, and American robins were the most common species observed.

On the southern sites, the abundance of breeding songbirds was greatest along the plot edge. We also detected more species along the edge, although the species richness was similar between the food plot and forest. Interestingly, when we looked at the number of species of songbirds that only occurred in any particular plot type, we recorded many more of these unique species at the plot edge (see the graph on the right). In total we detected 897 individuals and 65 species in the southern sites. Indigo buntings,

Breeding Bird Count		Average Number Detected		
		Food Plot	Edge	Forest
Northern Sites (20)	Species Abundance	17.7	17.7	16.4
	Species Richness	8.8	8.2	7.5
Southern Sites (20)	Species Abundance	5.6	13.9	5.7
	Species Richness	2.5	5.5	3.2
Winter Bird Count				
Southern Sites (10)	Species Abundance	2.8	8.3	3.6
	Species Richness	0.9	2.5	1.3

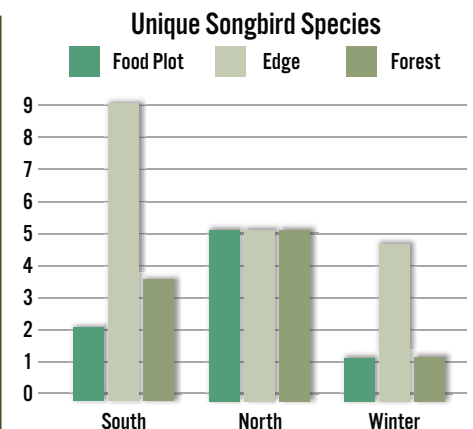
This table shows the average number of individual songbirds (species abundance) and average number of different species (species richness) of songbirds observed during the breeding season within food plots, at the food plot edge, and in the adjacent forest in the northern and southern sites, along with similar data from winter counts on the southern sites.

red-eyed vireos, and northern cardinals were the most common species detected.

We also conducted songbird counts during the winter on a subset of the southern sites.

Although we didn't find any statistical differences in the abundance of songbirds among the food plot, the plot edge, and the

adjacent forest, there was a general tendency for more birds to occur along the edge. As in the summer surveys, species richness was again greatest at the edge. In the winter we detected 265 individuals of 26 species. The most common species were the dark-eyed junco, eastern tufted titmouse, and the Carolina chickadee.



This figure shows the number of unique species of songbirds (species that were detected only in the specific plot type) within the food plot, at the plot edge, and in the adjacent forest in the southern sites, northern sites and during winter counts on a subset of southern sites. Clearly, the edge provided habitats specific to many unique species.

Small Mammal Results

During the two years of our study we captured 503 small mammals comprising 13 different species. On the northern sites, we captured 424 individuals of 11 species. Our index of abundance was greatest at the edge and forest treatments. We also recorded more species at the edge and forest. The most common species were the deer mouse, the white-footed mouse, and the red-backed vole. On the southern sites we captured only 79 individuals of seven species. On these sites, our capture rate did not differ among the plots, plot edge, or adjacent forest. The most common species captured on the southern sites were the white-footed mouse, deer mouse, and golden mouse.

Other Findings

In conjunction with our surveys of songbirds and small mammals, we measured numerous habitat and landscape

Continued.



ALFRED VIOLA, NORTHEASTERN UNIVERSITY, BUGWOOD.ORG

Indigo buntings were one of the most common species detected in our study. They winter in Central America and the Caribbean and breed throughout the central and eastern U.S. They nest in shrubs and plants close to the ground in open forests, edges, and early successional habitat. They feed on many different types of insects. Increasing edges, by creating food plots can be beneficial to indigo buntings.



DAVID CAPPAERT, MICHIGAN STATE UNIVERSITY, BUGWOOD.ORG

The deer mouse was one of the most common small mammal species detected in this study. Deer mice live in many habitat types, from open habitats to mixed forests. They nest in ground burrows, trees, and other cavities. Deer mice feed on nuts, seeds, and other grains. They do not benefit specifically from the food plot itself, but are greatly benefitted by the edge it creates.

variables that we thought would help to explain our findings. Probably our most important findings were that as food plot size increased songbird abundance and richness increased.

We also looked specifically at those species of songbirds that have been reported to be declining in abundance across their range. We used the Partners in Flight database (<http://www.partnersinflight.org/>) to select those species whose populations are classified as moderately or severely declining. In the northern sites, we detected 128 individuals from this group of declining species at the plot edge, 78 individuals in the forest, and 155 individuals within the food plot. Similarly, in the southern sites we found 106 individuals at the edge, 34 at the forest, and 66 within the food plot.

One concern that some biologists have regarding food plots is that they may be attractive to brown-headed cowbirds. Brown-headed cowbirds are nest parasites that lay their eggs in the nests of many other songbirds. The host species often accepts them and incubates the eggs. Brown-headed cowbird nest parasitism rates often are greatest along forest edges. However, in our study we recorded a total of only 22 brown-headed cowbirds across all of the study sites, so the impact of cowbird nest parasitism likely was insignificant.

BIRDWATCHING BASICS

By Will Ricks

Learning to identify those little “dickie birds” that visit you while on your deer stand can make even the most unproductive hunts more enjoyable. Getting started identifying all of those little brown birds may seem like a daunting task. As an undergraduate at North Carolina State University, my summer field course required me to learn to identify birds by sight and sound. At first it was difficult, but once I got the hang of it, it became easy and I looked forward to learning how to identify new species.

The most important item you’ll need to get started is a good field guide. There are many great field guides available, but I particularly like the *Sibley Field Guide to Birds*. These guides are available by region, so you don’t have to sift through a number of birds that you wouldn’t expect to see in your area. These guides are straightforward and fit easily into your pocket or hunting pack.

The next most important item is a good pair of binoculars. As hunters, most of us already have a good pair of binoculars. My binoculars are 10x42 and are great for hunting, but not ideal for birdwatching. If you are in the market for a new pair and are interested in both hunting and birdwatching, I recommend 8x40 binoculars. These binoculars are lightweight and allow ample light to see unique characteristics of the bird.

Finally, a very useful birding tool is one of the commercially available software packages that help you to identify birds by sound, sight, and habitat. One particularly useful package is *Thayer’s Guide to Birds of North America*. This package can even be downloaded to an iPod so you can carry it with you and verify the birdsongs you are hearing.

Hunters, landowners, and outdoor enthusiasts alike can gain a lot from birdwatching. All of the landowners who were involved in our food plot project are now amateur birders, and I have been impressed with their knowledge of birds. In my time working with QDMA I have learned one obvious truth – QDMA members are not only dedicated to the future of deer, but also the future of all wildlife species. So if you are in need of a new hobby that doesn’t take a lot of money, try birdwatching.

What Does All This Mean?

Food plots have been an integral part of deer habitat management for several decades. However, until now their impacts on other species has been relatively unknown. Our results indicate that, at least in the heavily forested habitats of the Appalachians, food plots create suitable habitat for a number of species of songbirds that typically may not occur, or not be abundant in the adjacent areas.

Many of the species of breeding birds that we observed in and around the food plots were species classified as Neotropical Migrants. These are species that breed in the temperate areas of North America but winter in Central and South America. Long-term population indices of many species of neotropical migrants have been in decline across much of their range. Interestingly, we found that several of these species were more abundant in the food plots or at the edge than in the adjacent forest, suggesting that the plots provided more suitable habitat features.

Although our surveys indicated positive relationships between avian abundance and food plots, we were unable to determine whether birds in these habitats successfully raised young. However, in our surveys we detected few cowbirds and potential nest predators such as blue Jays and American crows. These species are a major cause of nest failure in many habitats.

Because our study focused on the effects of food plots in the heavily forested areas of the Appalachians, extension of our results to other areas of the country, other habitat types, or even other types of food plot crops must be done with caution. For example, bird use of food plots planted with small grains, sorghum, or brassicas will certainly differ from what we observed

in our clover food plots. In fact, providing a variety of different types of plantings may benefit an even wider variety of songbirds.

Our study appears to provide convincing evidence that creation of food plots in forested areas can be beneficial to many species of songbirds, and can create habitat for a number of species that typically would not occur in these forested areas. So, while you're out there checking deer use of your food plots, or downloading pictures from your trail cameras, be sure to carry a good pair of binoculars and enjoy the blessings of the diverse bird community that are also benefiting from your efforts.

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Dr. Karl V. Miller is a professor of wildlife ecology and management at the University of Georgia. Karl is a Charter Life Member of QDMA.

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