Summary of Tennessee CP33 Monitoring Program in 2006-2008 and 2009-2011

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In 2004 the U. S. Department of Agriculture authorized Conservation Practice 33 (CP33) - Habitat Buffers for Upland Birds as a continuous sign-up practice under the Conservation Reserve Program (CRP). As a requirement for implementing this CRP practice, a protocol for monitoring bird response was devised by Mississippi State University and was implemented in 14 states. In Tennessee the monitoring was carried out by personnel of the Tennessee Wildlife Resources Agency and several other cooperators. The initial monitoring program was completed in 2008 and an additional 3 year period of monitoring was initiated to measure landowner adoption of scheduled mid-contract disturbance practices. A total of 40 fields with CP33 buffers, each paired with a similar control field (no CP33 buffers) were involved in the study. CP33 acreage per contract ranged from 1.3 acres to 38.9 acres and averaged 8.0 acres per contract. Only 7 fields had greater than 10 acres of CP33 buffer.

The final results of this monitoring project are reported in a doctoral dissertation produced at Mississippi State University (K. O. Evans, Multi-scale response of upland birds to targeted agricultural conservation. Mississippi State University. 2012) and is abstracted in this report. Some notes have been added to help explain Dr. Evans' findings.

1. For the Bird Conservation Regions (BCRs) in Tennessee that are included in this study, the Southeastern Coastal Plain and Central Hardwoods, there was highly variable response of bobwhites at the landscape scale. In other words, landscape composition determined response and it was variable across areas and years. Unlike migratory bird species, bobwhites do not exhibit high mobility and cannot respond to created habitat patches if populations of bobwhites are not already present in the immediate landscape and habitat is not connected by usable corridors or patches of habitat. Generally they will not pass through dense forest or across large crop fields.
2. Because of the short duration of the monitoring study the long-term viability of bobwhite populations was not addressed so an increase in bobwhites is not guaranteed to be long-term. Response of bobwhites in this period of this study could be due purely to weather or other environmental conditions.
3. Bobwhites were not found in urban and developed landscapes. This is reasonable since human habitation generally attracts feral cats and other small predatory animals and manicured lawns lack most of the structure needed for bobwhite survival.
4. There is a threshold of woody cover and amount of edge that negatively affects bobwhites. When woody cover becomes too dense, such as closed-canopied forest, bobwhites are no longer able to make use of it. On the other hand, too little woody cover that bobwhites can use for escape and shade is also a limiting factor. Edges that are irregular are more valuable than those that are straight. Shrubs and scattered small trees provide cover structure but too many are unusable if they are dense or the trees too tall.
5. The amount of native grass is positively related to abundance of bobwhites out to about 1/3 mile from the buffer. Beyond 1/3 mile the effectiveness grass is limited. In Tennessee, native grass buffers showed a weak positive association with bobwhite density, that is, the planting of

buffers led to a small increase in numbers of bobwhites counted. However, as noted above, we have no way to know if the increase will be sustained or if it was a short-term response to environmental factors.

6. The fall covey surveys also showed "substantial regional variation." The problem with fall covey distribution is that it is likely the result of redistribution of birds on the landscape. We know from studies of radio telemetered and banded bobwhite that they redistribute during the fall (September to October) in what has been referred to as the fall shuffle. In reality it is just bobwhite pairs and their young of the year and other individuals that come together in some centralized location within their home ranges to covey up into winter social units. This location is what is referred to as the "covey headquarters."

From 2007 – 2011, the occurrence of exotic invasive plants increased on Tennessee CP33 buffers. In 2011, 37.5% (15 of 40 buffers monitored) of the buffers had over 5% of the buffer in introduced forage grasses such as fescue, bermudagrass, and Johnsongrass. On these fields, such vegetation comprised an average of 30% of the buffer. Other problem vegetation such as sericea lespedeza and invading tree saplings were noted. Only 12.5% (5 of 40) had significant noncompliance issues influencing the plant cover.

One factor likely influencing the relatively low response of bobwhites and grassland birds to CP33 buffers in Tennessee is that most buffers are adjacent to wooded edges of agricultural fields where predation rates tend to be higher. One of the "selling points" for CP33 buffers to Tennessee landowners is enrolling unproductive field edges in CP33. Crop yields on field edges adjacent to woods are typically reduced by shading and competition for water and nutrients.

The average width of monitored buffers in 2011 was 70.5 feet; 27 were 50 feet or wider. The minimum programmatic width for CP33 buffers is 30 feet and the maximum is 120 feet.

Application of required mid-contract management (MCM) practices is essential to keep CP33 buffer vegetation in a beneficial condition. In the warm humid southeastern U.S., herbaceous vegetation gets dense quickly and invading tree saplings are a common problem. Disturbance practices such as disking and prescribed burning and proper application of herbicides is critical to control vegetation density and control undesirable woody growth. On the monitored buffers in 2011, over 50% of the buffers had some detectable MCM applied within the past year.

In general, the results of this study confirm much of what is known about habitat use and dynamics of bobwhites and that planting of field edge buffers alone in relatively extensive agricultural areas does not contribute to a strong and rapid response of bobwhites. Larger blocks of land contributing all of the necessary habitat needs of bobwhites, such as those being developed under the USDA Conservation Reserve Program's CP38E SAFE Bobwhite Habitat Restoration practice, are more likely to contribute to increases in bobwhite populations. Where buffers are established, they should be as wide as possible for maximum benefit. It is also critical that bobwhites already occur near to where habitats are being developed. Perhaps 1/3 mile is that distance but we need to conduct research to determine whether that is the case. Even then, a true evaluation cannot be made until the habitats have been in place for a number of years, perhaps 10 or more.

CP33 buffers were also intended to provide habitat for high conservation priority birds other than bobwhites. Songbirds monitored included the dickcissel, eastern kingbird, eastern meadowlark, field sparrow, grasshopper sparrow, indigo bunting and prairie warbler. Songbird response is even more difficult to assess because some species migrate far away from Tennessee (Central and South America) during the winter months while others migrate into Tennessee during the winter. These birds use a variety of cues to select a nesting or wintering site that may attract them to buffers one year and not in another. Many of the birds attracted to CP33 buffers were not high conservation priority species but it is still very difficult to assess this response due to variability of habitat from one year to the next. Also, some conservation priority birds are area-sensitive, that is they require some minimum area of habitat in order to either nest or to over-winter. Those that need large areas are not likely to use buffers. Many conservation priority birds are area-sensitive. In general, the monitored songbirds most commonly abundant in or responsive to CP33 buffers were field sparrows and indigo buntings, although the response was variable across landscapes and most dramatic during the first four years of monitoring. Field sparrow habitat is very similar to bobwhite habitat but can include smaller areas of habitat than is required by bobwhites. Indigo buntings are an edge species that thrives in woodland edges that border crop fields or pastures.

Results from this study indicate that for the eight bird species monitored, CP33 buffers alone, as implemented on the 40 Tennessee farms involved, were typically insufficient to significantly increase populations or use, though response varied on individual farms.

Finally, it must be recognized that CP33 buffers, while not necessarily contributing to dramatic increases in bobwhites or songbirds, have other values commonly referred to as ecosystem services. We did not monitor use of these buffers for other wildlife such as cottontails, deer, wild turkeys, or other wildlife. Also, as will all field border buffers, they can be important for protecting water quality by limiting runoff of excess nutrients and pesticides from cropped fields. As a result, these buffers should still be considered an important addition to agricultural fields. Buffers used in conjunction with block habitat improvements could improve future success of habitat programs by serving as corridors linking different blocks of habitat. This would generally require coordinating habitat programs among multiple landowners over large areas.

Tennessee landowners that desire to meaningfully improve and increase their bobwhite habitat should contact a Tennessee Wildlife Resources Agency private lands biologist. Contact information for the biologist for each county can be found at www.twraprivatelands.org or by calling the TWRA Wildlife and Forestry Division at 615-781-6610.