Burning, disking evaluated as bobwhite management in South Carolina

Management techniques can and do affect the plant composition and structure in early successional quail and songbird habitat, a study in South Carolina confirms.

The study of early successional habitats, field borders, perennial hedgerows, and native warm-season grasses on 14 fields across 250 acres on the Nemours Plantation in the coastal plains found that forb cover was increased on all areas treated.

"Forb cover was greater than grass cover in all treatment plots whether burned or disked and regardless of frequency," says Ernie Wiggers of the Nemours Wildlife Foundation.

The mean percent cover for forbs ranged from 49 percent to 71 percent and was highest in winter disking treatments conducted every 2 or 3 years. The mean percent cover for grass species ranged much lower, (16–40%), and was highest in treatment plots that were burned annually. Mean percent cover for bare ground was lowest, at or below 11 percent across all treatments, but was highest in treatment plots that were disked annually in winter or summer.

Researchers found the best timing for disking to prevent woody stem growth was in the spring, every 1 or 2 years. Frequency of disking had more to do with its value than timing.

Agricultural pest plants or otherwise undesirable species including crotalaria and dewberry were more dominant than desirable species in many treatment plots. Desirable plant species included grasses such as broomsedge and bluestems and seed producing forbs including ragweed and partridge pea. Broomsedge and other native grasses responded best to plots burned in winter and spring every 2 or 3 years. Ragweed and partridge pea were not widespread. Where they occurred in the seed bank, these forages responded best in plots disked in the winter.

Existing seed bank critical

The research confirmed that successful establishment of early successional habitat relies heavily on the existing seed bank. "Managers may want to evaluate their seed bank by first disking a test strip at different times of the fall and winter to observe resulting plant species," says Greg Yarrow of Clemson University. "To get quality habitat, you may have to eradicate undesirable species and plant desirable species if they don't exist in the seed bank."

Songbird nest searches resulted in 75 nests, primarily from shrub nesters. Field borders and hedgerows accounted for 61 percent of the nests but made up only 15 percent of the available field habitat. Only 11 bobwhite nests were found, but 951 telemetry locations showed ditch lines, food plots, and hedgerows were used by bobwhites more than field borders and native grasses.

Partners in the study include the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) in South Carolina, the South Carolina Department of Natural Resources, and Clemson University.

The results add to the science available on bobwhites, says Dr. Wes Burger of Mississippi State University (MSU), who coordinated 11 studies across the quail range, and Ed Hackett, a biologist with the NRCS Agricultural Wildlife Conservation Center (AWCC), which funded the study. The AWCC, located in Madison, Mississippi, is a fish and wildlife technology development center.

NRCS photo by Lynn Betts

Prescribed fire in grass

Summary of:

One in a series of summaries from the NRCS Bobwhite Restoration Project, Agricultural Wildlife Conservation Center Project # 68–7482–3–121

For more information, see:

USDA/NRCS Bobwhite Restoration Project online at
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