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Conservation Reserve Program Successes, Failures, and Management Needs for Open-Land Birds

By Randy D. Rodgers[1]

Introduction

With the steady intensification of agriculture and the associated declines in wildlife populations (e.g., Warner, 1984; Rodgers, 2002), conservationists have increasingly emphasized the need for proper establishment and management of Conservation Reserve Program (CRP) grasslands. Reports of positive responses by avian species to CRP grasslands are numerous and include benefits to songbirds (e.g., Reynolds and others, 1994; Best and others, 1997); ducks (e.g., Kantrud, 1993; Reynolds and others, 2001); ring-necked pheasants (*Phasianus colchicus*) (e.g., King and Savidge, 1995; Riley, 1995), and prairie grouse (*Tympanuchus* spp.) (e.g., Rodgers and Hoffman, 2005). Considering the long-term decline of many species of grassland birds (Knopf, 1994), these CRP benefits are particularly welcome. However, it is clear CRP grasslands, in some situations, failed to produce a significant positive wildlife response. The relative success, or failure, of CRP grasslands in benefiting wildlife can be directly linked to the species composition of original seedings, subsequent management of stands, and the physical location of lands enrolled in the program.

General Signup

The species originally seeded in General Signup CRP tracts are quite variable across the nation, understandably reflecting the need for vegetation suitable to local precipitation, soils, and conservation priorities. However, the species used in early CRP seedings (approximately 1987–1995) were also significantly influenced by availability, cost, social biases, and political boundaries. As a result, wildlife habitat needs were addressed in some regions and ignored in others, with sharp contrasts often appearing at state or county boundaries. Rodgers and Hoffman (2005) list numerous examples where single-species stands of aggressive, exotic grasses provided little or no benefit to prairie grouse. In particular, they indicated single-species stands of tall fescue (*Lolium arundinaceum*), crested wheatgrass (*Agropyron cristatum*), yellow bluestem (*Bothriochloa ischaemum*), Caucasian bluestem (*B. bladhii*), and weeping lovegrass (*Eragrostis curvula*) offered little benefit to prairie grouse. They noted two cases in which prairie grouse appeared to benefit from pure CRP stands of smooth brome (*Bromus inermis*), but still considered this species undesirable due to its tendency to crowd out other species of vegetation, especially forbs. The invasive nature of aggressive exotic grasses, most notably yellow bluestem and Caucasian bluestem (Knight, 2004), and the resultant threat they pose to native grasslands is, in itself, sufficient reason to prohibit any further inclusion of new seedings or existing stands containing these species in the CRP.

Most species of birds in early life depend on an invertebrate diet (e.g., Hill, 1985; Erpelding and others, 1987) and diverse habitats often provide greater invertebrate diversity and availability (e.g., Rands, 1985; Thomas and others, 1992; Chiverton, 1999). Thus, it is not surprising grassland birds have responded positively to multi-species CRP seedings, particularly those including a strong component of forbs. Rodgers and Hoffman (2005) noted the greatest positive responses of sharp-tailed grouse (*Tympanuchus phasianellus*) and greater prairie chickens (*T. cupido*) in regions where forbs, especially alfalfa (*Medicago sativa*), were present in initial CRP mixtures. Other researchers have called for a greater forb component in both CRP seeding mixtures and existing stands (e.g., Burger and others, 1993; Rodgers, 1999).

A key factor in the creation and longevity of vegetatively diverse CRP stands is application of periodic management. Most North American grasslands, and the grasses in them, evolved with, and consequently require, the periodic disturbances of fire and/or grazing by large herbivores (e.g., Fuhlendorf and Engle, 2001). Similarly, CRP grasslands generally require periodic disturbance to remain vigorous, diverse, and productive for wildlife. Such grassland disturbances remove excessive accumulated litter, accelerate nutrient cycling, and prevent encroachment of invasive woody species.

Appropriate management of CRP grasslands through periodic disturbance has been inadequate throughout most of the life of the program. In regions of modest to high precipitation, this lack of disturbance typically resulted in CRP stands choked with accumulated litter. Such stands not only lose vigor, but become nearly useless to all but larger wildlife species, such as whitetail deer (*Odocoileus virginianus*). While modest amounts of litter can facilitate nesting, the chicks of northern bobwhite quail (*Colinus virginianus*), ring-necked pheasant, and prairie grouse cannot forage effectively in unmanaged stands with excessive accumulation of litter.

Lack of adequate management has permitted encroachment of woody vegetation into CRP grasslands (fig. 1), particularly by eastern red cedar (*Juniperus virginiana*), Russian

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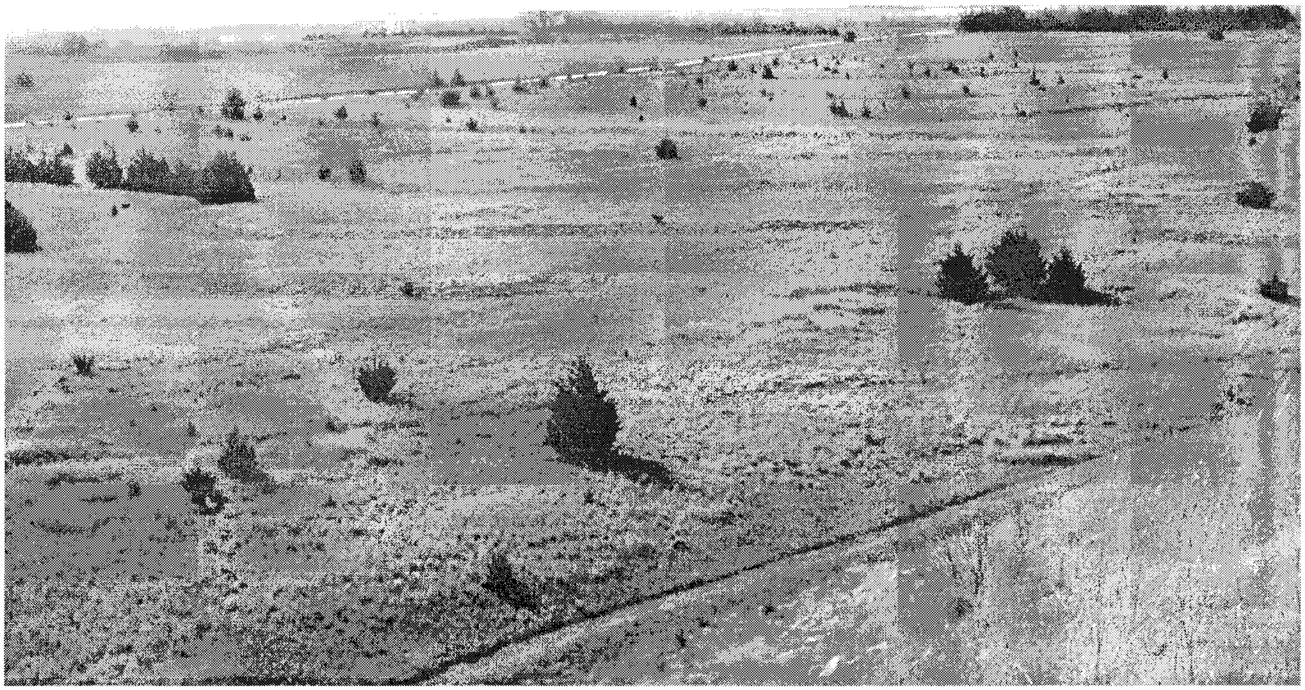

Figure 1. Encroachment of woody vegetation, such as red cedar (*Juniperus virginiana*), into undisturbed older Conservation Reserve Program grasslands threatens the quality of habitat for many species of grassland birds.

olive (*Elaeagnus angustifolia*), and several other highly invasive trees. Left unchecked, such encroachment will ultimately negate, in many regions, habitat benefits CRP grasslands have accrued for grassland birds. Densities of grassland songbirds rapidly decline as trees invade open grasslands, beginning even in the comparatively early stages of invasion (Coppedge and others, 2001; Rosenstock and van Riper, 2001; Grant and others, 2004). Declines in grassland songbird nest densities may be partly associated with behavioral avoidance of woody vegetation (Winter and others, 2000). A greater concern is the clear tendency for predation of grassland songbird nests to increase as distance to woody vegetation decreases (e.g., Gates and Gysel, 1978; Johnson and Temple, 1990; Winter and others, 2000). Similarly, parasitism of grassland bird nests by brown-headed cowbirds (*Molothrus ater*) is greater close to woody edges (e.g., Best, 1978; Gates and Gysel, 1978; Johnson and Temple, 1990; Winter and others, 2000).

Open-land gamebirds are also negatively affected by tree invasion. Raccoon (*Procyon lotor*) tree rest sites are strongly associated with eastern red cedar (Henner and others, 2004). Raccoons often use shelterbelts as travel lanes (Fritzell, 1978). Such increased activity by raccoons has been shown to decrease nest success of northern bobwhite (Taylor and Burger, 1997; L.W. Burger, Jr., unpub. data, 2004). Snyder (1984) found predation of ring-necked pheasant nests was 2.4 times greater within 660 yards (600 m) of tree plantings than at more distant locations. He indicated these tree plantings harbored not only greater numbers of mammalian predators, but also more avian nest predators such as American crow (*Corvus brachyrynchos*) and black-billed magpie (*Pica pica*). Indirect reduction in predation and parasitism of grassland birds could be accomplished by removing trees, thus reducing mammalian rest sites, and the nesting and perching sites of avian predators and nest parasites (Herkert, 1994).

Long-term declines of grassland birds (Knopf, 1994) could be exacerbated if the U.S. Department of Agriculture (USDA) fails to act decisively in requiring removal and appropriate herbicide treatment of invasive trees from CRP grasslands. Such stands could become seed sources effectively accelerating tree invasion of native grasslands. Misdirected (albeit well intentioned) policies have not only allowed, but sometimes encouraged, tree planting on CRP grasslands.

Geographic proximity of CRP grasslands to existing habitats has played a large role in the relative derivation of wildlife benefits. Wildlife population increases or range expansions attributed to CRP grasslands generally occurred in situations where new grasslands provided suitable habitats accessible to pre-existing populations. Prairie grouse in the Great Plains and Intermountain West have primarily benefited from the CRP where enrolled grasslands were established near existing occupied native rangelands (Rodgers and Hoffman, 2005). The melding of new CRP grasslands into existing grassland mosaics, or at the periphery of large blocks of existing grassland, had the effect of creating grassland complexes large enough and of adequate quality to foster prairie grouse population growth. In the case of the lesser prairie chicken, a candidate species for listing under the Endangered Species Act, their CRP-related population expansion in Kansas has played a significant role in averting a need to list the species. Similarly, juxtaposition of CRP grasslands near prairie potholes in the Northern Great Plains has provided much needed nesting habitat for ducks (e.g., Kantrud, 1993), resulting in strong population increases. In contrast, CRP tracts isolated in vast cropland expanses are less likely to contribute substantially to conservation of grassland species experiencing long-term declines in populations and distribution, although such stands are valuable to more ubiquitous species.

Continuous Signup of the Conservation Reserve Program

The various grass buffers available through the Continous Conservation Reserve Program (CCRP) offer excellent opportunities to improve habitat in regions of extensive croplands, as occur on the Great Plains, while effectively treating erosion. Wildlife requiring extensive grasslands, such as prairie grouse, may obtain little direct benefit from buffers. However, buffers can create abundant, high quality edge habitats furnishing brood and escape cover for popular species like ring-necked pheasant and northern bobwhite. Concerns that CRP grass buffers might create predator travel lanes where nesting success is low, as in narrow fencerows, are mitigated by the much greater widths and better concealment provided by buffers (Rodgers, 1999). On the central and Southern Great Plains, buffer strips also commonly occur adjacent to winter wheat (*Triticum aestivum*), which together in spring comprise large blocks of nesting-cover rather than strips.

Considerable USDA emphasis has understandably been placed on CCRP buffers addressing water quality issues. While establishment of grass filter strips has been successful in the Corn Belt states, particularly in Iowa, buffer establishment on the Great Plains has fallen far short of desired targets. This disappointing response to CCRP on the Great Plains is not due to a lack of buffer practices suitable for the region, nor can it be attributed to insufficient need for application of these practices. Poor acceptance of CCRP practices by farm operators, particularly on the High Plains, is more attributed to well-intentioned but impractical program rules that have created unreasonable barriers to buffer establishment.

The prolonged drought that has plagued much of the western United States since 1999 has triggered numerous wind erosion events of a magnitude reminiscent of those experienced during the Dust Bowl era of the 1930's (fig. 2). Smaller, less noted events cumulatively may have accounted for even greater soil loss than occurred in these spectacular dust storms.

Perhaps the most effective CCRP buffer practice that could be used to combat wind erosion and to enhance moisture

Figure 2. A dust storm in northwest Kansas, May 29, 2004. This storm caused significant loss of soil and highway fatalities due to loss of visibility and accidents. This storm was estimated to be 125 miles (200 km) wide, and approximately 2,000 feet (600 m) high. The storm traveled about 185 miles (300 km) across the High Plains before dissipating. Photographer unknown.

conservation, Cross Wind Trap Strips (CP24), has had negligible enrollment, only 667 acres (270 ha) nationwide, as of June 2004. Other in-field buffers that could address these issues on the windy High Plains (Contour Grass Strips CP15A, CP15B) have to date also had limited enrollment. Despite substantial efforts to promote such buffers, acceptance has been poor, due, in no small part to USDA rules that either prohibit or make impractical winter grazing of fields where these buffers occur. This so-called incidental grazing is totally prohibited under CRP rules. When Cross Wind Trap Strips are present, even in situations where incidental grazing is permitted with in-field buffers, program requirements to obtain county Farm Service Agency (FSA) permission and to sustain a 25% reduction in CRP rental payment are unacceptable to most farm operators who manage livestock. Livestock producers regard these requirements as inflexible, cumbersome, and impractical for their operations, particularly considering the small acreages and payments typically associated with buffer practices. Consequently, existing rules have become impediments to the implementation of otherwise outstanding conservation practices. To avoid these impractical USDA barriers to effective management of their operations, a few producers have gone to the extent of installing buffers at their own expense, without CCRP enrollment.

These well-intentioned incidental grazing rules appear to have been implemented under an incorrect assumption that winter grazing will degrade grass buffer function and/or longevity. Yet, grasses utilized in these buffers are the same used in general signup CRP stands where periodic grazing disturbance has recently been recognized by USDA as a benefit, not a detriment, to stand vigor and to wildlife habitat. Even the term incidental grazing is probably a misnomer since it is unlikely that livestock will actually graze the coarse, dormant grasses in buffers during winter when they have access to much more palatable, nutritious crop residue or green wheat. Actual disturbance of in-field buffers during winter grazing has been observed to be limited to the hoof action that occurs when livestock cross grass strips or occasionally bed on them. Neither of these activities is likely to impair buffer function. Research is currently underway to measure potential effects of winter grazing on in-field buffers and results should be available in 2005 (A.W. Allen, oral commun., 2004).

Recommendations for Refinement and Future Management of the Conservation Reserve Program

1. No further planting of aggressive exotic grasses in new CRP seedings should be allowed. Further, USDA should not permit future reenrollment of CRP stands that contain significant areas of invasive exotic grasses or grasses that offer little or no wildlife benefit. Grass species that should be eliminated from the CRP include tall fescue, Caucasian bluestem, yellow bluestem, weeping lovegrass, and crested wheatgrass. This would force either total conversion (not 51%) of such stands to more favorable vegetation or would have the effect of making those program acres available in other areas.
2. Progress toward making multi-species stands, with strong forb components, the standard for CRP grasslands must continue. Multi-species does not imply the sole use of native species, but introduced species used for CRP grasslands must not be invasive and should not be overly aggressive. Alfalfa is a notable example of an introduced species that provides habitat characteristics highly desirable to native wildlife. Especially when critical native forb equivalents are commercially unavailable, small quantities [0.1 lb/acre (0.05 kg/0.4 ha)] of alfalfa should also be included in rare and declining habitat (CP25) stands. Forbs, including legumes, will benefit CRP grasslands by fixing nitrogen and extracting micronutrients from deep subsoils through taproots, thus building both soil quantity and quality. Forbs also diversify stand structure and increase invertebrate diversity, both of which improve habitat qualities for grassland birds.
3. A greater proportion of program acres currently assigned to agriculturally isolated CRP grassland blocks should gradually be shifted to localities near existing native habitats. In doing so, these new CRP blocks will complement habitats such as wetlands or existing rangelands, effectively creating habitat mosaics that benefit critical grassland bird populations much more than do isolated stands of CRP. This goal could be accomplished through modification of the Environmental Benefits Index or through Conservation Priority Areas.

This geographic reassignment of CRP priorities need not come at the expense of soil, water, or wildlife conservation on agriculturally isolated tracts. Most conservation benefits derived from isolated CRP blocks could be maintained by automatically retaining CRP eligibility for critical portions (10–30%) of such stands in a new *residual* CRP designation. Local soil and wildlife conservationists, in cooperation with the farm operator and landowner, could determine what acres to retain in CRP based on soils, erodibility (wind or water), wildlife benefits, and farming efficiency. Critical conservation acres in residual CRP might be configured as blocks, a series of conservation buffers, or block and buffer combinations. These retained critical CRP acres could benefit species like ring-necked pheasant and northern bobwhite quail more than the pre-existing large blocks if configured to create abundant cropland-grassland edge. Retaining critical acres in residual CRP and adding more CCRP buffers on working lands may provide the best overall soil, water, and wildlife conservation opportunities in regions dominated by vast expanses of cropland.

4. Proper management of CRP grasslands must be encouraged through continued development of practices and incentives flexible enough to accommodate regionally variable needs as determined by climate, soils, and local conservation priorities. For example: Periodic controlled burning can be made simpler, safer, and more effective by encouraging establishment of clean-tilled firebreaks around the field periphery prior to the burn. Tilled firebreaks facilitate a safe burn and typically encourage establishment of annual vegetation during the subsequent growing season, an essential component of reproductive habitat for numerous avian species. Experience has clearly shown tilled grasses, even when disked with 3–5 passes, fully recover after two to three growing seasons.

   Managed grazing or, to a lesser degree, haying offer potential for effective, desirable periodic disturbance of CRP grasslands. Both types of practices should be viewed as opportunities for CRP stand enhancement, since associated removal of excess litter could facilitate subsequent interseeding of forbs. Short-term (<2 months), intensive grazing conducted outside the primary nesting season is more likely to provide the hoof action needed to diversify and reinvigorate CRP grasslands than is low-density, long-term stocking or haying. These practices should not be applied across the country in a one-size-fits-all manner. Managed disturbance can be applied at 3–4 year intervals in regions with moderate to high precipitation, but these disturbances should occur less frequently as aridity increases. If emergency haying or grazing must be applied, such events should count as part of the managed haying and grazing cycle and should not become additive to managed haying or grazing events.

5. Invasive trees on existing CRP grasslands must be eliminated. With species such as the eastern red cedar, this may involve cutting and/or controlled fire. Invasive deciduous trees that readily resprout will require cutting and immediate treatment of stumps with an appropriate herbicide. Invasion by woody vegetation in CRP grasslands has often occurred as a consequence of maintenance avoidance. As a consequence, it is reasonable that future reenrollment of tree-invaded CRP grasslands should be contingent on agreement by landowners and/or operators to appropriately remedy this problem, at their expense, and to prevent reinvasion. Remaining incentives that encourage tree plantings on or adjacent to CRP grasslands must be discontinued and even landowner/operator tree plantings strongly discouraged. Where woody cover is considered appropriate and essential, native shrubs should be utilized.

6. Impractical incidental grazing restrictions that have impeded acceptance of in-field CCRP buffers [e.g., Cross Wind Trap Strips (CP24); Contour Grass Strips (CP15)] on the Great Plains should be discontinued, both for the winter gleaning of crop residue and for winter grazing of green wheat. This includes restrictions requiring permission from county FSA officials before such grazing can occur, restrictions on timing and duration of winter grazing, and the requirement to forego 25% of the annual CRP rental payments when winter grazing occurs. It is not in the landowner's or the operator's own interest to maintain livestock on such fields at an inappropriate time or for a duration that exceeds forage availability. Consequently, regulation of these issues is unnecessary and wasteful of USDA human resources. Winter occurrence of livestock on crop fields containing in-field buffers appears unlikely to impair buffer function and may help maintain the vigor of buffer grasses.

7. Continued consultation between USDA, state wildlife conservationists, and non-governmental organizations is essential if CRP rule formulation and application are to optimize soil, water, and wildlife conservation benefits. Program rules must provide a practical framework that makes the outstanding conservation practices of the CRP attractive to producers within their respective agricultural contexts.

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