



Executive Summary

Jonathan B. Hafler, Ecosystem Management Research Institute

PO Box 717
210 Borderlands
Seeley Lake, MT 59868
Email: Jon_Hafler@emri.org

Conservation benefits of the Farm Bill are allocated through the various conservation programs including the Conservation Reserve Program (CRP), Environmental Quality Incentives Program (EQIP), Wildlife Habitat Incentives Program (WHIP), and other related programs. Each program has its stated purpose and operational guidelines. However, conservation incentives are actually accomplished through use of specific practices that are identified independently of the programs. Most of these practices can be utilized in more than one conservation program. For example, range planting is a practice that can be used in a project administered through CRP, EQIP, WHIP, or other conservation programs. While it is important to understand benefits to fish and wildlife accrued through use of conservation programs, it is also important to understand the benefits that have been documented for specific practices. This volume addresses conservation practices that can be used to provide fish and wildlife benefits through the Farm Bill. It does not specifically focus on investigations of actual Farm Bill funded projects, but rather summarizes investigations that have addressed various benefits or impacts to fish and wildlife resources associated with the primary practices utilized for fish and wildlife objectives within Farm Bill programs. The chapters in this volume do not attempt to provide a complete review of all literature pertaining to these practices, but rather to provide documentation of fish and wildlife responses reported in the literature. Chapters

are designed to address primary practices and their fish and wildlife benefits associated with croplands, established grasslands, linear conservation practices, native grasslands, wetlands, and aquatic ecosystems. In addition, a final chapter discusses the importance and need for use of adaptive management.

Brady (this volume) discussed the responses of fish and wildlife to the primary conservation practices used in croplands. He noted that agriculture has had the greatest effects on wildlife habitat of any anthropogenic cause. Many cropland conservation practices are targeted at reducing soil erosion. Reducing sediment delivery and run-off of agricultural pollutants will have positive effects on aquatic systems and species. He noted that such practices may also benefit wildlife populations when properly planned, but may have little or no benefits without this planning. He noted the importance of considering the landscape context in agricultural settings and the importance of providing appropriate plant communities and habitat elements within agricultural landscapes if wildlife benefits are to be provided.

Jones-Farrand et al. (this volume) discussed the wildlife benefits associated with the establishment of grasslands, focusing primarily on practices that apply to the Conservation Reserve Program, but that could equally apply to application of such practices in other programs. They reported substantial benefits to wildlife that have been produced through establishment of grasslands, especially in comparisons to wildlife benefits from row crop agriculture. This was espe-

cially true for bird populations that have received the most investigation. They noted a lack of research that has focused on responses to many other taxa. They also noted variability in wildlife responses and the need for additional investigations that included landscape analyses. Because of the complexities caused by differences in sites, size, and shape of established grasslands, surrounding landscape parameters, temporal factors, and other considerations, specific benefits to wildlife of grassland establishment will be species- and site-specific.

Clark and Reeder (this volume) discussed the benefits to wildlife of many linear practices that are used primarily in croplands for water and soil conservation, but that can also provide some benefits to wildlife. Example practices include filter strips, grassed waterways, buffers, contour strips, riparian strips, and windbreaks and shelterbelts. Their review of the literature revealed that the small area and high edge-interior ratios of these practices limited the benefits to wildlife. Most studies, as was found for establishing grasslands, focused on bird populations, and information on most other taxa are inadequate. Landscape influences also need additional attention. Clark and Reeder (this volume) concluded that with careful planning and management, various benefits to wildlife can be produced with linear practices, especially in comparison with the alternative of having areas remain in row crops.

Haufler and Ganguli (this volume) discussed wildlife responses to conservation practices applied on rangelands, with specific focus on the grasslands of the Great Plains. Investigations of wildlife responses to prescribed grazing reported both benefits and impacts to wildlife. Similarly, prescribed burning investigations also found both positive and negative responses by wildlife species, but generally burning produced favorable results for wildlife. Range planting and restoration of declining habitat were generally reported to produce positive benefits to wildlife, but a complicating factor was how to identify comparisons to treated areas. “Native” ecosystems were found to be poorly defined in many investigations. A number of studies revealed the need to enhance grassland heterogeneity, best defined in reference to ecosystems produced under historical disturbance regimes. This information has been lacking, so grassland investigations have used a variety of definitions

of “native” grasslands for comparative purposes. Other grassland practices were reviewed by Haufler and Ganguli (this volume) including fencing, pest management, brush management, and tree planting and shelterbelts. These practices were found to have both positive and negative effects on wildlife. Birds were the taxon most studied, with relatively few investigations of other taxa. More information on all species is needed, especially in terms of factoring in site effects, surrounding landscape conditions, and cumulative assessments.

Rewa (this volume) reviewed literature pertaining to wildlife responses to wetland practices. He reported similar findings to those of other chapters in this volume — that bird responses to practices have received the most attention. A majority of studies found that bird communities in restored wetlands were similar to those of natural wetlands. Wetland restoration was found to produce rapid responses by amphibians and invertebrates. Factors that influenced wildlife responses included size of restored wetlands, proximity to other wetlands, the age and complexity of a restored wetland, and the management of the wetland. As with other chapters in this volume, the chapter by Rewa (this volume) stressed the need for additional information on taxa other than birds and longer term studies on responses by all taxa.

Knight and Boyer (this volume) summarized the responses of aquatic species and their habitats to conservation practices. They reported benefits and impacts to fish and aquatic fauna produced by these practices. They stressed the importance and need for evaluating responses within watersheds, as aquatic resources are influenced by not only the direct practices occurring in aquatic ecosystems, but also those that influence the inputs to aquatic ecosystems. Knight and Boyer (this volume) reviewed a number of practices designed to reduce inputs of sediments, nutrients, or pesticides into aquatic ecosystems. They also reviewed many practices used to improve or maintain riparian or shoreline condition, which in turn helps maintain water quality and aquatic species and habitats. Other practices they reviewed included direct management of aquatic resources such as fish passages, fish pond management, pond establishment, shallow water management, and stream habitat improvement and management. In general, practices they reviewed help reduce impacts of agri-

cultural activities on aquatic ecosystems and produce benefits to aquatic species and their habitats. They noted some exceptions to this, where certain practices can result in impacts to various aquatic resources. They noted the complexity of variables influencing responses and reported on many additional information needs.

Franklin et al. (this volume) provided a description of adaptive management and stressed the importance of incorporating this concept in the monitoring of fish and wildlife responses to conservation practices. The need for additional information stressed in all of the previous chapters points to the need for new approaches to monitoring and documenting responses to Farm Bill practices. A systematic approach to defining expected responses and then monitoring if these responses were produced was described. Four case studies describing applications of adaptive management with implications for its use in monitoring Farm Bill practices were presented.

In total, the chapters in this volume provide a summary documentation of the numerous benefits to fish and wildlife that can be produced through Farm Bill practices. However, most practices can produce both positive and negative responses by different species, requiring that specific objectives be articulated as a basis for evaluating positive responses. The complexities of fish and wildlife responses with factors emerging at various scales make simple conclusions difficult. Much additional research is needed if responses to practices are to be adequately understood for effective planning. Responses by many taxa are virtually unknown. These information gaps emphasize the need for application of adaptive management in a systematic manner as part of an expanded monitoring program. ■