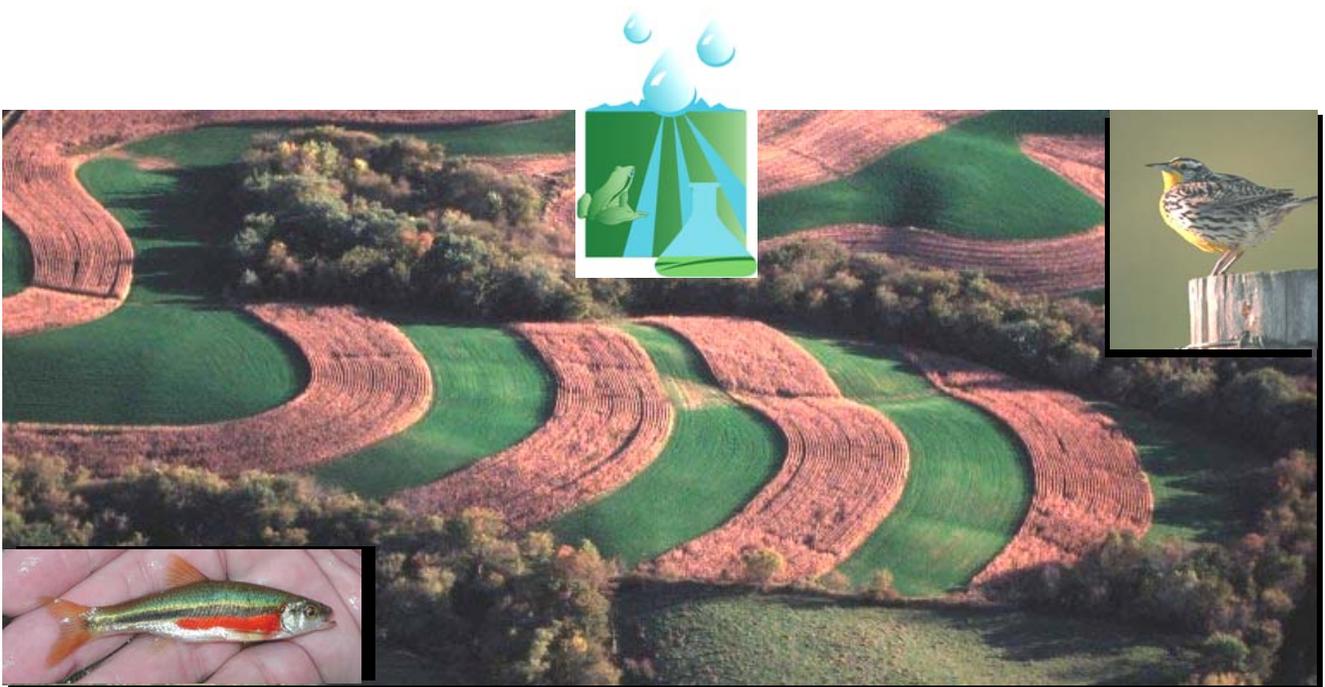


Working Draft

Work Plan
for the
Wildlife Component

Conservation Effects Assessment Project (CEAP)
National Assessment



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USDA, Natural Resources Conservation Service
Resource Inventory and Assessment Division
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Executive Summary

The Wildlife Component of the Conservation Effects Assessment Project (CEAP) National Assessment is an effort to quantify the effects of the U. S. Department of Agriculture's (USDA) conservation practices and programs on fish and wildlife and their habitats in landscapes influenced by agriculture in the United States. The Wildlife Component complements the CEAP Cropland Component by addressing fish and wildlife population responses and habitat issues that are not obtainable through its sampling and modeling framework. Since fish and wildlife are affected by conservation actions taken on a variety of landscapes, the Wildlife Component also links to the Wetlands and Grazing Lands Components, to the extent possible. The myriad effects of the many conservation practices on innumerable fish and wildlife species and communities are virtually impossible to comprehensibly quantify. Therefore, the Wildlife Component operates under some basic principles to document those effects that are reasonably quantifiable. These principles include working collaboratively with others already engaged in relevant assessments, leveraging the use of existing data to the extent possible, identifying critical data gaps and stimulating actions to fill them, and focusing assessments on regional scales.

Working in partnership with the Natural Resources Conservation Service (NRCS) and the Farm Service Agency, The Wildlife Society is spearheading efforts to summarize effects of USDA conservation programs and practices already documented in the literature. This effort, resulting in the production of one literature synthesis volume based on conservation programs and another volume based on groups of conservation practices, provides a baseline of understanding upon which additional assessment efforts can build.

Under a contribution agreement with NRCS, the Association of Fish and Wildlife Agencies is assisting with conducting workshops and otherwise engaging state fish and wildlife agencies and others in identifying on-going relevant assessment activity and recognizing and prioritizing remaining assessment needs at the regional level. Specific Wildlife Component projects are then able to target data gaps and meet outstanding assessment needs identified by the fish and wildlife conservation community. Assessment actions and projects initiated and funded by the Wildlife Component are complemented by numerous other on-going and related activities that can be used to help explain conservation practice effects on fish and wildlife. Wildlife Component projects funded through Fiscal Year 2006 and related activities are briefly described in this work plan. As new insights and understanding is generated from these efforts, assessment priorities are expected to shift. Therefore, this work plan is intended to serve as a living document that is regularly updated to adapt to emerging assessment needs in the future.

Introduction

The U.S Department of Agriculture (USDA) is engaged in an effort to quantify the environmental benefits of agricultural conservation practices supported by USDA programs and technical assistance from field technicians (Mausbach and Dedrick 2004). This Conservation Effects Assessment Project (CEAP) is comprised of several components, including a National Assessment that contains the Cropland, Wetlands, Wildlife, and Grazing Lands Components; and a series of Watershed Assessment studies that complement the National Assessment components through focused investigations conducted in select watersheds around the country. The purpose of CEAP is to enhance the technical information necessary to better address the Nation's environmental and conservation goals related to agricultural policy, programs, and activities.

The CEAP Wildlife Component was established to develop approaches to assess and document the fish and wildlife benefits of USDA conservation programs and practices. A diverse inter-organization task force was assembled to provide input to this effort. Whereas the approach of the Cropland Component focuses on the use of existing physical effects process models applied to a sample of cropland and Conservation Reserve Program (CRP) field sites throughout the country to estimate soil and water related benefits nationwide, the approach taken by the Wildlife Component relies on assembling and coordinating a wide array of assessment activities already underway and targeting additional effort to fill high-priority data gaps. Priority is given to making use of existing natural resource information and data and applying them in ways that help document specific effects of conservation practices on fish and wildlife resources. Although this effort is titled the Wildlife Component, it attempts to capture and document, to the extent possible, effects of conservation practices on the full spectrum of aquatic and terrestrial fauna potentially affected by agricultural activities. This work plan lays out the framework under which the Wildlife Component operates. It is intended to be a living document, subject to regular modification and refinement as additional activities are identified and initiated and as funds become available.

As they are implemented, elements of the Wildlife Component are intended to generate outcomes that will enable stakeholders to gain an appreciation of fish and wildlife benefits achieved. Results should inform USDA's efforts to tailor conservation programs and practices to increase their effectiveness in addressing fish and wildlife conservation needs in agricultural landscapes.

Agricultural conservation programs and wildlife

The reliance of the majority of fish and wildlife resources in the United States on private lands has long been recognized (Hall 1946). Over 75% of the land base in the conterminous United States is in private ownership. Nearly 20% of the total land area is under cultivation and more than one-third is comprised of private grazing lands. These land base attributes highlight the importance of private land management to the welfare of fish and wildlife resources in agricultural landscapes and beyond.

Agricultural practices and farm policy have long affected the welfare of fish and wildlife communities in much of the U.S. (Gerard 1995). Impacts associated with conversion of natural habitats to crop and livestock agricultural production has historically been a primary cause of natural ecosystem degradation and fish and wildlife habitat loss (Noss et al. 1995, Tewksbury et al. 2002). New technologies involving agrichemicals, precision farming equipment, and crop genetics are enabling production to intensify on lands currently under cultivation (Cassman et al. 2005). These technological advances, in combination with government price supports for commodity crops, make it profitable in some areas to place new lands such as native prairie into agricultural production (House 2005, Johnson 2005, Brady 2006, Stephens 2006). These advances can place further stress on biodiversity, potentially damaging ecosystem services associated with native biota, such as pollination (Kremen et al. 2002). At the same time, advances in our understanding of ecological principles and conservation practices have provided insight on how agricultural producers can integrate fish and wildlife habitat considerations into their land management activities (Cassman et al. 2005). Producers and conservationists are finding new ways to work cooperatively with the land to generate both agricultural and natural resource “commodities,” including productive fish and wildlife habitats (DeVore 2002, Imhoff 2003).

The Conservation Title of the 1985 Food Security Act (Farm Bill) opened a new era of conservation (Myers 1988, Heimlich et al. 1998). In response, the wildlife conservation community has increasingly become focused on the opportunity that USDA conservation programs and practices offer to benefit fish and wildlife habitats and populations in the United States. Wildlife agencies and groups have been involved in the legislative process to enhance the fish and wildlife conservation potential in farm bills that reauthorized and expanded the 1985 conservation provisions (1990, 1996, and 2002 Farm Bills). Many studies have been conducted to document the value of these conservation programs to wildlife resources (Heard et al. 2000, Allen 2004, Haufler 2005). Numerous special sessions have been held at wildlife conservation community venues such as the North American Wildlife and Natural Resources Conference and The Wildlife Society annual conferences to highlight wildlife conservation accomplishments and opportunities provided by the farm bill. State fish and wildlife agencies and non-governmental conservation organizations are assisting with delivery of conservation programs to enhance fish and wildlife habitat on private lands throughout the country. Many of these entities have entered into formal agreements with USDA to assist in program implementation.

CEAP Wildlife Component Objectives

The primary objective of the CEAP Wildlife Component is to quantify the effects of agricultural conservation practices on fish and wildlife resources on landscapes influenced by agriculture in the United States. The Wildlife Component is intended to complement other components of CEAP. The majority of initial CEAP effort has been placed on development of the Cropland Component—sampling and modeling associated

with the cropland component have been underway since 2003. Therefore, initial focus of the Wildlife Component is on documenting fish and wildlife benefits derived from conservation practices applied in and around croplands, including lands enrolled in the CRP, followed by documenting wildlife effects associated with other land uses. The Wildlife Component objectives are:

Short-term:

- Develop and implement approaches for estimating fish and wildlife effects associated with conservation practices applied in cropland settings (including CRP).

Longer-term:

- Develop and implement approaches for estimating fish and wildlife effects associated with conservation practices on wetlands, grazing lands, and forestlands.
- Develop and implement approaches to extending water quality benefits measured by the Cropland Component to effects on aquatic organisms.



The **Wildlife** Component seeks to assess the effects, to the extent possible, of conservation practices on important terrestrial and aquatic species. This includes terrestrial vertebrates and invertebrates in upland settings as well as fish and other aquatic organisms directly or indirectly affected by agricultural practices.

While the highest priority is placed on addressing cropland and CRP enrollments, work to develop approaches to address other land uses can move forward without waiting for the cropland objective to be completely met. In effect, work in all land types is proceeding simultaneously, where feasible. Efforts are also underway to integrate approaches to capturing fish and wildlife benefits into the CEAP Wetlands and Grazing Lands Components.

Developing an Approach

In 2004, an initial task force was established to develop an approach for the CEAP Wildlife Component. This group consisted of individuals from numerous organizations that are interested in or had been previously involved with efforts to quantify the fish and wildlife benefits of USDA conservation programs. Output from two workshops—one in January 2004 in Washington, D.C., and another in June 2004 in Fort Collins, Colorado—helped lay the foundation for the Wildlife Component approach. Individuals from the following federal partner agencies were involved with initial scoping activities:

Natural Resources Conservation Service (NRCS): Resource Inventory and Assessment Division (CEAP Wildlife Component lead), Ecological Sciences Division, Easement Programs Division, Wildlife Habitat Management Institute, National Resources Inventory and Analysis Institute
Farm Service Agency (FSA): Conservation and Environmental Programs Division, Economics and Policy Analysis Staff

Cooperative State Research, Education and Extension Service: Natural Resources and Environment
Agriculture Research Service: National Sedimentation Laboratory
Economic Research Service
U.S. Geological Survey: Biological Resources Division
U.S. Fish and Wildlife Service: Division of Bird Habitat Conservation, Habitat and Population Evaluation Team, Partners for Fish and Wildlife Program
U.S. Environmental Protection Agency

The interest and resources of numerous other individuals and entities have been involved with and are connected to the component in many ways. Individuals representing other federal agencies, non-governmental organizations (e.g., Association of Fish and Wildlife Agencies, The Wildlife Society, Wildlife Management Institute, Ducks Unlimited, Pheasants Forever, Quail Unlimited, North American Waterfowl Management Plan joint ventures, Audubon, The Nature Conservancy, NatureServe, Defenders of Wildlife, Trout Unlimited, American Fisheries Society, and others), universities and other academic institutions, and state fish and wildlife agencies have provided input to and assistance with planning Wildlife Component activities. The intent of working with this diverse group of primarily fish and wildlife scientists and managers is to capture the on-going work in this active field and to encourage others to become engaged as specific action items are identified.

What do we mean by “effects?”

For purposes of the Wildlife Component, documented “effects” of practices on fish and wildlife may include any of the following attributes that are quantified in a scientifically based, technically credible way:

1. documented ***habitat use*** by target species or groups
2. changes in ***habitat quality*** for target species or groups
3. target species ***population response***

Documented habitat use is generally described as the occurrence of an organism in a habitat, regardless of its health or breeding status. While documenting use of habitats by target species is informative, it is limited without additional information on how the habitat supports the survival and reproduction of the species in the area. Additionally, fish and wildlife use of local habitats associated with conservation practices may be difficult to predict due to the effects of landscape condition, local weather patterns, regional population status, and other factors. Quantifying population response is the most powerful measure of effects, yet it is not always possible to tie population changes to practice effects because of the great many extraneous factors that affect species population dynamics. The most reliable predictor of effects may be quantification of the change in habitat quality for target species associated with implementation of conservation practices. A focus on habitat quality is useful in predicting the potential for habitats to provide the conditions necessary for target species to survive and reproduce.

The approach of the Wildlife Component attempts to compile documentation of each of these categories of effect, wherever feasible and to the extent possible.

Efforts have been made to develop indicators of ecosystem services (National Research Council 2000, The Heinz Center 2002). There is continued interest in developing aggregate ecological indicators to gauge the health of the environment, similar to the way well-established economic indicators track the state of the U.S. economy (Meyerson et al. 2005). While such indicators may be attractive for use in assessing effects of certain conservation actions, they have not been developed to the point where they provide much promise for use in the CEAP Wildlife Component in the near-term. Therefore, the majority of the effort focuses on quantifying effects of common practices and conservation systems on fish and wildlife species or species groups for which documentation is available or obtainable in the near future.

Considerable attention has been placed by a variety of wildlife conservation interests to set strategic habitat and population objectives for priority species or groups. Examples include plans developed by joint ventures established by the North American Waterfowl Management Plan beginning in the mid-1980s (U.S. Fish and Wildlife Service 1986). These joint ventures have expanded to adopt all-bird conservation objectives, which have ties to specific plans developed for waterbirds (Kushlan et al. 2002), shorebirds (Brown et al. 2001), land birds (Rich et al. 2004), northern bobwhites (<http://www.bobwhiteconservation.org>) and other bird species integrated through the efforts of the North American Bird Conservation Initiative (NABCI, <http://www.nabci-us.org/main2.html>). Similar planning efforts are evolving for non-bird species. The Eastern Brook Trout Joint Venture (Schwaab et al. 2005) associated with the emerging National Fish Habitat Initiative and National Fish Habitat Action Plan (<http://www.fishhabitat.org>) is developing a conservation plan for this at-risk fish species. Where possible, conservation effects documented through the CEAP Wildlife Component will be set within the context of habitat and population objectives established by various elements of the fish and wildlife conservation community. This provides the opportunity to go beyond documenting habitat use, shifts in habitat quality, or changes in populations by conveying meaning to such changes with respect to established national or regional goals for target species. Water quality metrics associated with land treatment practices may have little use without some sense of what such metrics mean for the health of receiving water bodies (Soil and Water Conservation Society 2006). Likewise, documented fish and wildlife effects viewed in the context of specific habitat and population objectives are much more useful than providing simple metrics without an understanding of what these metrics mean for target species.

Literature Review

As with other CEAP components, the first step in developing the approach for the Wildlife Component involves examining the current literature on fish and wildlife effects and establishing the state of our knowledge in this area. As noted above, much effort has been made to study the wildlife response to USDA conservation programs. A milestone

of compiling this work is the comprehensive literature review and synthesis conducted by Heard et al. (2000). Since the production of that work in 2000, considerable additional study has been done by a variety of investigators. Expanded implementation of programs such as the Wildlife Habitat Incentives Program (WHIP) and the Environmental Quality Incentives Program (EQIP) has greatly extended the accomplishments of these programs beyond where they were in 2000. The execution of new conservation programs authorized by the 2002 Farm Bill has also resulted in considerable additional habitat accomplishments. Therefore, a new effort was initiated to review the published literature and update the state of our understanding of the fish and wildlife benefits derived from conservation programs and practices.

In 2005, NRCS and FSA entered into an agreement with The Wildlife Society (TWS - <http://www.wildlife.org>) to synthesize the current literature regarding fish and wildlife response to conservation programs and practices. This effort was conducted in two phases. Phase I provided an update of the 2000 program-based literature review developed by Heard et al. (2000), and Phase II is intended to synthesize the literature describing the fish and wildlife benefits of specific conservation practices. Phase I of this effort, the program-based literature review update, was finalized in November 2005 (Haufler 2005 - <http://www.nrcs.usda.gov/technical/nri/ceap/fwbenefit.html>). The Phase II (practice-based) review is expected to be complete by fall 2006. The following are some of the primary findings of the Phase I program-based literature review update.

- Most data are from studies conducted on bird response to the CRP.
- Small wetlands in crop fields protected by Swampbuster continue to be critical to waterfowl productivity (Brady 2005, Reynolds 2005).
- Many grassland bird populations have benefited from the change in land use from cropland to grass cover associated with the nearly 20 million acres of CRP in the Great Plains states (Johnson 2005).
- CRP habitat in the Midwest likely contributes to the population growth and stability for some, but not all, grassland wildlife species (Farrand and Ryan 2005).
- Grassland bird production on individual CRP contract fields depends on the cover composition and disturbance from haying and grazing (Johnson 2005).
- Southeastern CRP grasslands managed through burning provide greater vegetation structure and wildlife habitat value than similar sites managed by mowing (Burger 2005).
- While habitat for some grassland bird species is improved the year after (emergency) haying (e.g., horned lark, chestnut-collared longspur, lark bunting), many more species' habitat quality declines (Johnson 2005).

- From 1992–2003, the presence of upland nesting cover provided by CRP in the upper Midwest resulted in the production of 25.7 million additional upland nesting ducks in the Prairie Pothole Region (Reynolds 2005).
- Studies show positive wildlife response to CRP in the Midwest, but results are complicated by the diversity of vegetation condition and landscape patterns (Farrand and Ryan 2005).
- Continued permanent loss of native grasslands using new technologies and genetically modified crops potentially offsets temporary wildlife habitat gains from CRP in the Great Plains (Brady 2005, Johnson 2005).
- For many species, landscape conditions surrounding specific habitats provided by conservation enrollments or practices (CRP or Continuous CRP buffers) may have a greater influence on habitat suitability than local habitat conditions (Clark and Reeder 2005, Farrand and Ryan 2005).
- Small mammal, herptofauna, and invertebrate use and diversity in conservation buffers are generally positively correlated with the width of the buffer (Clark and Reeder 2005).
- Wildlife use of grassland habitats established with exotic forage grasses in the Southeast is low (Burger 2005).
- Mid-contract management of CRP sites in the Southeast is important for improving wildlife habitat value (Burger 2005).
- Field borders in the Southeast have been shown to benefit northern bobwhite and other species (Burger 2005).
- High bird use has been documented in many upland buffer habitats, yet nest success is low due to the effectiveness at which predators are able to search linear buffer habitats for nests (Clark and Reeder 2005).
- Few papers have been published on the Conservation Reserve Enhancement Program (CREP), although some studies are currently underway. Additional monitoring is needed (Allen 2005).
- Several studies have documented greater wildlife response to restored wetland complexes enrolled in the Wetlands Reserve Program (WRP) than expected, and numerous unpublished reports imply increasing value of this program for wetland wildlife (Rewa 2005).
- There are few published data on the wildlife value of WHIP, EQIP, the Grassland Reserve Program, or the Conservation Security Program (Berkland and Rewa

2005, Gray et al. 2005, Henry 2005, Wood and Williams 2005). However, the potential for practices funded by these programs to benefit wildlife is substantial.

The Phase II literature review entails compiling relevant literature into sections that relate to major habitat types affected and the primary conservation practices applied in these habitats. This approach is useful in evaluating the fish and wildlife benefits of certain conservation practices, regardless of the structure of the programs that support them. Since CEAP is primarily focused on quantifying the effects of conservation practices, this information provides a more useful background for the Wildlife Component than the Phase I program-based literature synthesis. Primary findings of the Phase II practice-based literature review can be summarized as follows: *(to be completed following production of the Phase II report)*

Cropland Systems

Linear Strips and Conservation Buffers

Riparian/Aquatic Habitats

Herbaceous Vegetation Establishment

Grassland/Rangeland Habitats

Afforestation

Wetland Habitats

Cumulative/Landscape Effects

Monitoring and Adaptive Management

Within both the program-based and practice-based literature review efforts, key data gaps and information needs were identified. For purposes of informing the CEAP Wildlife Component, literature review authors identified the following data gaps and information needs:

- While wildlife values of CRP lands have been documented, long-term studies are needed to track changes in habitat values over time. Wildlife benefits of CRP documented in the 1990s may no longer apply today due to changes in local cover conditions, shifts in enrollments, and landscape-scale changes in land use.
- Studies are needed to assess the wildlife use of CRP and similar habitats during the non-breeding season (e.g., winter and migration habitats). There is a particular need to examine non-breeding winter use of CRP and other grassland practices in the Southeast.
- Better information is needed on the effect of landscape attributes on wildlife use of CRP habitats and the effect of habitat patch size on grassland bird response.
- Studies at greater spatial and temporal scales to address the complexities of grassland bird abundances and nesting success on CRP lands are needed.
- The effects of haying CRP fields on reproductive success of nesting birds during the season of harvest are largely unknown.
- Better information is needed on how non-avian wildlife species respond to CRP habitats on local and landscape scales.
- Comparisons of abundance and reproductive success of grassland species in native prairie versus CRP habitats are needed.
- Further evidence of wildlife population-level change attributable to the availability of CRP grasslands at regional scales is needed.
- A better understanding of the influence of local wildlife responses to sites enrolled in any of the programs on local and regional population dynamics is needed.
- Better understanding of reproduction and survival of all wildlife species in conservation buffers and similar strip habitats is needed.
- The effect of buffer width on use and reproductive potential of birds and other highly mobile species remains largely unknown.
- Better understanding of how conservation buffers influence movement of wildlife in fragmented agricultural landscapes is needed.
- The effect of WRP restored wetlands on local and regional population dynamics of wetland birds, amphibians, and other wetland wildlife is poorly understood.

- An assessment of how continued conversion of native prairie grasslands to agricultural production may be off-setting grassland habitat benefits achieved through programs such as CRP and GRP is needed.
- EQIP projects specifically targeted to benefit fish and wildlife resources need to be tracked and assessed for their effectiveness in benefiting targeted species.
- Umbrella practices, such as the Upland Wildlife Habitat Management practice, cover a broad range of upland habitat manipulation actions to improve habitat quality for wildlife species that vary among sites, frequently integrating many types of practices applied to the planning unit. Better information is needed on how these broad practices actually change habitat conditions and what benefits to individual species or species groups are achieved.
- Better documentation of aquatic community response to dam removal and other stream restoration practices supported by WHIP and EQIP is needed.
- Is measured change in habitat quality suitable for tracking wildlife benefits, regardless of actual species response?
- Once practices are installed, how does habitat quality change over the life of the practice, with or without active management?

Although considerable advancements have been made, these information needs illustrate some of the questions that remain. There are more than 160 conservation practices in the NRCS Field Office Technical Guide. Many of these practices have the potential to affect the multidimensional and dynamic suite of fish and wildlife resources inhabiting agricultural landscapes and beyond. The indefinite ways that these practices, applied in various landscape settings, affect fish and wildlife presents a severe logistical challenge for comprehensively quantifying effects. While virtually any land management action taken has some effect on the biological community, there are some practices that are more likely to have a greater effect on this community than others. For practical purposes, we have grouped the common practices most likely to affect fish and wildlife habitat potential by major landscape category where they are typically applied (Table 1). Where feasible, CEAP Wildlife Component emphasis is placed on quantifying the effects of these primary practices on fish and wildlife.

Table 1. Broad landscape categories and common conservation practices (NRCS practice code) most likely to affect fish and wildlife habitats. Description of practices and standards for implementation are provided in the NRCS electronic Field Office Technical Guide (<http://www.nrcs.usda.gov/technical/efotg/index.html>).

Active cropland
 Conservation Crop Rotation (328)
 Cover Crop (340)

- Drainage Water Management (554)
 - Forage Harvest Management (511)
 - Residue Management, Mulch Till (345)
 - Residue Management, No-Till/Strip Till/Direct Seed (329)
 - Residue Management, Ridge Till (346)
 - Residue Management, Seasonal (344)
- Buffers and strip habitats
- Alley Cropping (311)
 - Contour Buffer Strips (332)
 - Cross Wind Trap Strips (589C)
 - Field Border (386)
 - Filter Strip (393)
 - Grassed Waterway (412)
 - Hedgerow Planting (422)
 - Herbaceous Wind Barriers (603)
 - Riparian Forest Buffer (391)
 - Riparian Herbaceous Cover (390)
 - Vegetative Barriers (601)
 - Windbreak/Shelterbelt Establishment (380)
 - Windbreak/Shelterbelt Renovation (650)
- Established herbaceous habitat
- Conservation Cover (327)
- Wetlands and lentic aquatic habitats
- Constructed Wetland (656)
 - Dam (402)
 - Dike (356)
 - Fishpond Management (399)
 - Pond (378)
 - Shallow Water Development and Management (646)
 - Structure for Water Control (587)
 - Wetland Creation (658)
 - Wetland Enhancement (659)
 - Wetland Restoration (657)
 - Wetland Wildlife Habitat Management (644)
 - “Swampbuster” wetland protection
- Streams and lotic aquatic habitats
- Channel Bank Vegetation (322)
 - Fish Passage (396)
 - Stream Crossing (578)
 - Stream Habitat Improvement and Management (395)
 - Streambank and Shoreline Protection (580)

Grazing lands

- Brush Management (314)
- Prescribed Grazing (528)
- Range Planting (550)

Forestland

- Forest Stand Improvement (666)

Multiple category practices

- Early Successional Habitat Development/Management (647)
- Mine Shaft and Adit Closing (457)
- Nutrient Management (590)
- Pest Management (595)
- Prescribed Burning (338)
- Restoration and Management of Declining Habitats (643)
- Silvopasture Establishment (381)
- Tree/Shrub Establishment (612)
- Upland Wildlife Habitat Management (645)
- Wildlife Watering Facility (648)

Practices are generally applied as part of Resource Management Systems (RMS), whereby multiple practices are used to address the various natural resource concerns on a planning unit (USDA NRCS 2003). Practices may be applied progressively, depending upon the producer's ability to implement the conservation plan in which they are prescribed, and may influence resource concerns or be affected by conditions outside the planning area. The effects of individual practices on fish and wildlife resources, therefore, vary substantially among landscapes, land uses, and RMS settings where they are applied.

Individual conservation practices are planned and applied through the use of Conservation Practice Standards, which provide the basic criteria and considerations used in the planning process. Specific characteristics of individual practices may vary from site to site in order to meet site-specific natural resource planning objectives. This variability and the influence of local and regional landscape conditions makes it challenging to accurately predict the aggregate effects of various conservation practices on fish and wildlife.

Assessment Approach

The primary approach to assessing the effects of conservation programs and practices on fish and wildlife is to work collaboratively with others to capture the work already completed or underway in this arena, and to identify critical data gaps and stimulate action to fill them. This involves acknowledging and assembling assessments conducted

by NRCS and other federal agencies, universities and other academic institutions, state and local government entities, and non-governmental organizations.

Since funding for fish and wildlife-specific assessments pursuant to CEAP are limited, the highest priority identified for the Wildlife Component is to gather existing fish and wildlife information and relate it to conservation practices to the

extent possible. There is a substantial amount of work already underway to assess the fish and wildlife habitat benefits of the Farm Bill by a variety of organizations. The Wildlife Component seeks to leverage these projects to help meet the objectives of CEAP.

Since fish and wildlife resources, agricultural landscapes, and conservation programs and practices vary greatly across the country, much of the effort to assess wildlife response is best approached at the regional level. This approach aligns closely with the recommendations of the CEAP Blue Ribbon Panel on regionalization of CEAP efforts (Soil and Water Conservation Society 2006). Regional groups have been engaged to help set priorities and define approaches targeted toward prominent fish and wildlife species or groups in each region and the dominant conservation programs and practices applied there. In some instances, such as the Southeast Quail Study Group's efforts to better understand the plight of the northern bobwhite, this work has been underway for several years. In other cases, more effort is needed to identify priorities and initiate evaluations.

Under a contribution agreement with NRCS, the Association of Fish and Wildlife Agencies is assisting with engaging state fish and wildlife agencies and others at the regional level. Regional workshops have been conducted at various meetings of regional associations of fish and wildlife agencies to identify on-going assessment efforts and associated priorities for meeting future needs (Fig. 1). With consideration of assessment needs identified by the literature reviews presented above, these efforts have generated a preliminary list of high priority assessment needs for each of four broad geographic regions generally aligned with regional associations of fish and wildlife agencies (Table 2). While there are many other needs, this list represents a starting point for the highest priorities perceived by the fish and wildlife conservation community upon which to focus additional assessments associated with the CEAP Wildlife Component. The list of regional priorities is treated as a dynamic register, subject to regular update as other priorities are identified and refined. Additional input from the conservation community is being sought to continually refine assessment priorities.

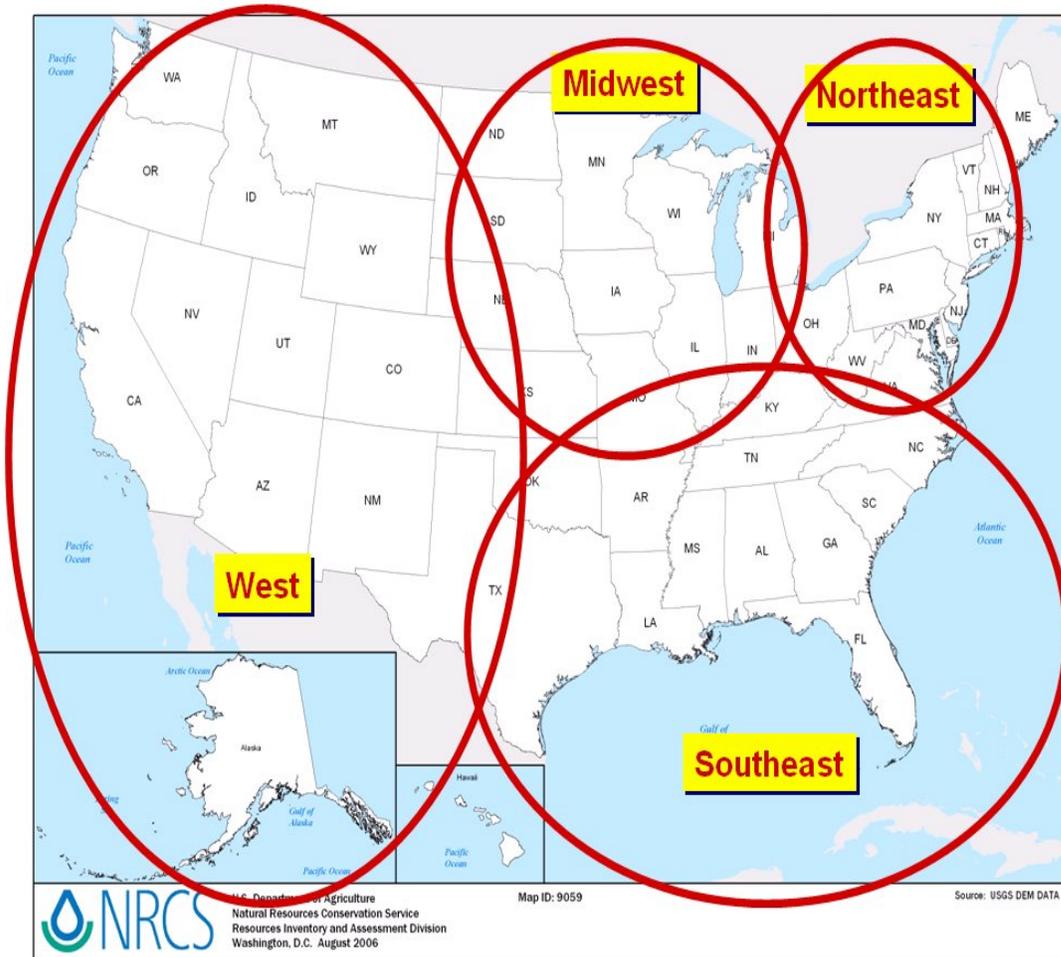
Some of the priorities identified in Table 2 are being addressed by various efforts either directly or indirectly related to CEAP Wildlife efforts. Efforts to address remaining

Assessment Principles

- Work collaboratively with others engaged in relevant assessments
- Leverage the use of existing data to the extent possible
- Identify critical data gaps and stimulate action to fill them
- Based on regional assessment priorities

priorities will be undertaken as projects to address these needs are identified and as funding becomes available in the future.

Figure 1. Regions employed by the CEAP Wildlife Component roughly align with regional associations of fish and wildlife agencies. Regions overlap because fish and wildlife agencies in many states belong to more than one regional association.



Regional associations of fish and wildlife agencies include the Midwest Association of Fish and Wildlife Agencies (<http://mafwa.iafwa.org/>), Southeastern Association of Fish and Wildlife Agencies (<http://www.seafwa.org>), Northeast Association of Fish and Wildlife Agencies (<http://www.neafwa.org>), and Western Association of Fish and Wildlife Agencies. (<http://www.wafwa.org>)

Table 2. Preliminary Regional CEAP Wildlife Component assessment priorities identified through regional workshops and surveys of state agency Farm Bill and private lands coordinators.

<p>Northeast</p> <p>Fish response to stream restoration, dam removal and fish passage</p> <p>Early successional habitat establishment benefits</p> <ul style="list-style-type: none"> - All species response to grassland blocks - All species response to planted vs. natural regeneration - All species response to scrub-shrub and old-field habitat restoration and management* <p>Riparian buffers – terrestrial and aquatic biota response</p> <p>Aquatic community response to upland conservation practices</p> <p>Terrestrial and aquatic species response to forestry practices</p>
<p>Southeast</p> <p>Range-wide northern bobwhite response to CP-33 upland buffers*</p> <p>Model wetland habitat quality changes associated with WRP wetland restoration*</p> <p>Wildlife response to rangeland treatments</p> <p>Fish response to stream restoration and riparian buffer practices</p> <p>Mid-contract management of pine plantations</p> <p>Wildlife response to improved pasture treatments</p>
<p>Midwest</p> <p>Expand analysis of waterfowl response to CRP in the Prairie Pothole Region to include FSA common land unit (CLU) contract data</p> <p>Non-game and non-bird response to wetland restoration and buffers</p> <p>Model wetland habitat quality changes associated with WRP wetland restoration*</p> <p>Landscape-level bird trends [from USGS Breeding Bird Survey (BBS) data] and land use associated with Farm Bill enrollments*</p> <p>Effects of upland conservation practices on stream biota</p> <p>Effects of on-going prairie conversion on wildlife</p> <p>Effects of various seeding mixtures and mid-contract CRP management</p> <p>Rotational grazing effects on upland wildlife (common EQIP practice)</p> <p>Shorebird and herpetofauna response to wetland restoration and microtopography practices</p>
<p>West</p> <p>Fisheries (salmonids and others) response to stream restoration, buffers, and upland practices</p> <p>Long-term Great Plains wildlife trends and CRP, etc. (mine State agency population data)</p> <p>Model priority bird habitat potential and practices using GIS (Great Plains)*</p> <p>Prairie grouse, pronghorn and quail response to rangeland practices</p> <p>Response of shrub-steppe species to practices</p> <p>Wildlife response to water developments</p>

*partially addressed by current CEAP Wildlife Component funded project(s).

Planned Activities

The CEAP Wildlife Component includes several key activities intended to quantify the effects of conservation practices on fish and wildlife. Most of these are related to work that is already underway or planned for the near future. Whereas some are national in scope, the majority of actions planned are focused at the regional scale to address priorities identified by regional work groups. Combining major landscape/habitat types used in Table 1 to organize practices with regional assessment needs defined in Table 2 provides some structure in developing actions to assess fish and wildlife benefits. Table 3 lists various assessment projects funded through the CEAP Wildlife Component and initiated in FY 2005 and 2006 to address high priority assessment needs. Shaded cells correspond to areas where regional priorities have been identified. Additional information describing assessment efforts funded by the Wildlife Component is provided in the following pages.

Table 3. FY05/06 CEAP Wildlife Component-funded assessment projects.
(Shaded cells highlight initial priority regional needs identified by regional work groups.)

Habitat type	Northeast	Southeast	Midwest	West	National
Active cropland					
Buffers and strip habitats		CP33 modeling	CP33 modeling		
Established grass/early successional	New England scrub-shrub birds			G ² P ² habitat modeling	
Wetlands		MO WRP monitoring	MO WRP monitoring		NEXRAD Doppler radar studies
Grazing lands					
Forestland					
Streams and aquatic habitats			TNC IPA studies TBD		
All habitat types		NatureServe MO pilot UNCO BBS analysis	NatureServe MO pilot UNCO BBS analysis		

CP33 modeling

As part of implementing the upland habitat buffers CRP practice (CRP practice code CP33), state agencies are required to monitor northern bobwhite and other bird response to establishment of this upland habitat buffer practice. Most states are using standard protocols developed to monitor northern bobwhite response to applied CP33 buffer practices (Burger et al. 2004). The purpose of this project is to assemble and analyze state-generated monitoring data to assess the effects of this practice on bobwhites and grassland birds at state, Bird Conservation Region (BCR) (<http://www.nabci-us.org/bcrs.html>), and species range-wide spatial scales. Specific objectives are to (1) provide annual statistically-valid density estimates of northern bobwhite (and other birds) on fields enrolled in the CP33 buffer practice at state, regional (BCR), and national levels; (2) provide a measure of relative effect size of the CP33 practice; and (3) evaluate through modeling approaches the effect of local landscape context on bird population response. The project is scheduled to take place over a three-year period.

New England scrub-shrub bird assessment

Scrub-shrub nesting birds in the Northeast have experienced significant population declines in recent decades. USDA conservation programs such as WHIP, CREP, WRP and CRP are being used to provide grassland and scrub-shrub habitats in the Northeast to help address these population declines and provide habitat for other wildlife that use early successional habitats. Wildlife biologists in the Northeast associated with the CEAP Wildlife Component have identified a need to assess the benefits that early successional habitats developed through Farm Bill programs in New England are providing to scrub-shrub nesting birds. This project attempts to analyze a variety of existing data sets on scrub-shrub bird response to habitat development in New England and conduct additional analyses of bird monitoring, land use, and conservation program enrollment data to illustrate how scrub-shrub habitats on USDA program enrollment lands affect scrub-shrub bird populations. Three primary phases of this project are planned: 1) a detailed literature synthesis to describe the current state or our understanding of wildlife response to early-successional habitat development in New England; 2) synthesis and analysis of existing vegetation and bird response data sets previously collected by the U.S. Forest Service's Northeastern Research (<http://www.fs.fed.us/ne/amherst/index.html>) Station in scrub-shrub habitats including silvicultural openings, power-line right-of-ways, reclaimed scrublands, scrub oak barrens and beaver impoundments; and 3) an assessment of scrub-shrub bird response to USDA program enrollments in New England using implications from literature and data synthesis elements and analysis of data from the North American Breeding Bird Survey (<http://www.pwrc.usgs.gov/bbs/>) and American Woodcock Singing-ground Survey (<http://www.fws.gov/migratorybirds/reports/status03/Woodcock.pdf>) The project is scheduled to take place over a three-year period.

Great Plains GIS Partnership (G²P²) habitat modeling

The Great Plains GIS Partnership (G²P²) is a collaborative effort between the Playa Lakes Joint Venture, Rainwater Basin Joint Venture, U.S. Fish and Wildlife Service (USFWS), and Central Platte Natural Resources District (CPNRD). G²P² was formed to improve cooperation, communication, reduce redundancy, and accelerate the application of GIS technology towards landscape level planning for wildlife conservation. NRCS has entered into an agreement among the Playa Lakes Joint Venture (PLJV/G²P²) and FSA in order to develop a collaborative assessment of the effects of USDA conservation programs and practices on avian fauna in BCR 19

(<http://www.abcbirds.org/nabci/centralprairie.htm>) (Central Mixed-grass Prairie) in support of the CEAP Wildlife Component. This agreement enables CEAP to leverage existing GIS technology and landscape habitat modeling resources of G²P² to obtain scientifically credible estimates of habitat contributions for priority bird species in the Great Plains attributable to USDA conservation programs and practices.

Missouri Wetlands Reserve Program (WRP) habitat monitoring

Through a partnership between USDA NRCS and the Missouri Department of Conservation, ecological and compliance monitoring data were collected on approximately 600 separate Wetlands Reserve Program (WRP) easements throughout Missouri during 2003–2005. Ecological data were also collected on a variety of non-WRP wetland restoration projects in Missouri through efforts funded by the U.S. Army Corps of Engineers and the North American Wetlands Conservation Act. Analysis of these data sets has the potential to help document the effects of WRP and other wetland restoration practices on a variety of wildlife species. This project supports a detailed evaluation of existing WRP monitoring data and, to the extent feasible, a synthesis of common data elements among WRP and other wetland restoration ecological monitoring data sets available in Missouri. Results will be used to document wildlife benefits of wetland restoration pursuant to CEAP Components and inform future ecological monitoring efforts in Missouri.

NEXRAD Doppler radar studies

The USGS National Wetlands Research Center <http://www.nwrc.usgs.gov/> (NWRC) is a nationally and internationally recognized leader in the field of migratory bird and wetland science. NWRC scientists are currently involved in using emerging Doppler weather radar technology to estimate migratory bird habitat use and density patterns. They are also involved in a collaborative national effort with others to foster radar-related wildlife research and software development across the country. The USGS-NWRC is recognized as a leader in scientific discovery and applied use of study findings in the fields of restoration ecology, bird migration, and wetland science by the scientific and wildlife management communities.

Through its Agricultural Wildlife Conservation Center (<http://www.whmi.nrcs.usda.gov/>), NRCS has entered into an interagency agreement with USGS-NWRC to gather data and conduct analyses of USDA program wetlands by migratory birds, with an initial focus on the Central Valley of California where the potential to analyze archived NOAA Doppler weather radar data and Wetlands Reserve Program restored wetlands is high. This project will also result in the development of tools that aid in restoration planning within a landscape context, assessment of use of WRP sites by migratory birds (e.g., use during pre- and post- restoration phases, if data are available), and advancement of technology for using Doppler weather radar data to understand bird-WRP habitat relations. Output from this effort will also be used to inform the CEAP Wetlands Component.

NatureServe Missouri pilot

NatureServe (<http://www.natureserve.org/>) is a national organization affiliated with a network of state natural heritage programs. In cooperation with USDA and Missouri state partners, NatureServe is conducting a pilot project in Missouri to develop and evaluate methods for assessing benefits of conservation practices on wildlife habitat improvement. This project integrates and leverages work already initiated with Missouri NRCS and funded by the Environmental Defense Center for Conservation Incentives. The key objective is to demonstrate processes that can both evaluate the benefits of previously installed conservation practices as well as help prioritize Farm Bill program allocations. Both objectives of USDA require models that link biological element (e.g., wildlife habitat) compatibility with conservation practices such that application of practices can be predicted to have beneficial, neutral, or negative effects. Methods to evaluate benefits should be the same as those used to prioritize future investments to make the decision making process defensible and amenable to monitoring of intended effects. However, spatial and tabular data sets used in this type of analysis vary across states, and limit the types of analyses that can be conducted nationally. This project uses the state of Missouri as a pilot and is intended to assess the ability to measure conservation benefits given different types of data.

Overlays of multiple data layers (e.g., NatureServe species occurrence data) are being used to correlate known conservation practices (from digitized applied practices in Missouri) with wildlife habitat and species occurrence. Levels of uncertainty associated with the spatial precision of component data sets will be documented. Currency and relative completeness of relevant information on conservation practices, species occurrence, and conservation status of species, and the relative quality/viability of species occurrences and wildlife habitat will also be documented. The outcome of this pilot effort will provide recommendations for extending this study to a national level. Outcome measures from this study will focus on how conservation practices contribute to habitat potential of rare and at-risk species.

University of Northern Colorado NRI-USGS Breeding Bird Survey data analysis

This work links NRCS National Resource Inventory (NRI - <http://www.nrcs.usda.gov/TECHNICAL/NRI/>) land use/land cover data and USGS North American Breeding Bird Survey (BBS) (<http://www.pwrc.usgs.gov/bbs/>) data to estimate grassland breeding bird response to land use and conservation practices installed over time. Preliminary work involves correlating bird population trends at the BBS route scale with land use, including CRP enrollments, as determined by NRI sample points within 30 km of the center point of BBS routes. Previous studies have revealed this to be a useful approach for correlating northern bobwhite population trends with land use in the Midwest (Veech 2006). This project expands this effort to analyze existing NRI and BBS data to assess grassland bird population trends and species richness metrics associated with lands enrolled in the CRP in Bird Conservation Regions throughout the central and eastern U.S. Data generated is expected to yield considerable insight into how birds respond to conservation practices at landscape scales.

The Nature Conservancy (TNC) Intergovernmental Personnel Assignment (IPA)

Through the efforts of its scientists and associates, The Nature Conservancy (TNC) has been studying the effects of various agricultural practices on stream biota in several watersheds in the Midwest (Rankin and Armitage 2004). NRCS has entered into an Intergovernmental Personnel Act (IPA) agreement with TNC to assign an NRCS employee in one of TNC's Midwest offices to leverage on-going assessment work and seek other opportunities to assess aquatic biota response to conservation practices. Specific priorities include developing approaches to using soil and water quality model output from the CEAP Cropland Component to make inferences on stream habitat quality and aquatic biota and to explore opportunities to modify CEAP modeling to include stream habitat quality parameters.

Related On-going Activities

There are number of activities that, although not directly funded through the Wildlife Component, relate directly to filling the needs and data gaps identified. Table 4 lists projects and activities that provide the potential to fill high priority assessment needs related to the CEAP Wildlife Component. Shaded cells correspond to areas where CEAP Wildlife Component regional priorities have been identified. Additional information describing these assessment efforts is provided in the following pages.

Table 4. CEAP Wildlife Component related activities that contribute to filling identified assessment needs. (Shaded cells highlight initial priority regional needs identified by regional work groups.)

Habitat type	Northeast	Southeast	Midwest	West	National
Active cropland					NASS Survey Audubon Birds & Agriculture
Buffers and strip habitats		CP33 monitoring MSU Bobwhite studies	CP33 monitoring		
Established grass		FSA-CRP - Bobwhite MSU Bobwhite studies	FSA-CRP - Pheasants - Ducks	FSA-CRP - Prairie grouse	
Wetlands		CEAP Wetlands	CEAP Wetlands	CEAP Wetlands	Audubon Birds & Agriculture
Grazing lands		MSU bobwhite studies CEAP Grazing lands	CEAP Grazing lands	USU sage- grouse studies CEAP Grazing lands	
Forestland					
Streams and aquatic habitats		FSA CRP/ CREP - mussels			
All habitat types					SCWCS monitoring* NRCS Institute and AWCC projects

*Monitoring component of State Comprehensive Wildlife Conservation Strategies

Cropland Component - National Agricultural Statistics Service (NASS) Producer Survey

The 2004-2006 landowner survey (<http://www.nrcs.usda.gov/technical/nri/ceap/surveys.html>) conducted by the National Agricultural Statistics Service (NASS) in support of the CEAP Cropland Component contained six questions related to how landowners perceive wildlife on their lands and how they view wildlife response to practices they have installed. While the data

generated from these questions are not equivalent to empirical data derived from quantitative wildlife assessments, they are useful to identify which conservation practices are being used by producers to enhance wildlife habitat and how wildlife use of these practices is viewed by producers. This information is also useful to regional groups and others interested in identifying practices that should be assessed for their utility in providing wildlife habitat. Survey information will provide a better understanding on whether producers make special accommodations for wildlife or plan and configure conservation practices with wildlife in mind.

The purpose of these questions is to obtain information about the on-site effects of conservation practices on wildlife habitat.

Questions include:

1. Have you modified or added any conservation practice SPECIFICALLY to improve the quality of fish or wildlife habitat? If yes, indicate what practices were installed or modified.
2. For the field practices indicated in the previous questions, will you manage the cover for wildlife purposes?
3. Have you seen changes in wildlife numbers because of these conservation practices? If so, what changes (choices are provided for common, easily recognized species)
4. How desirable do you consider the following wildlife on your property? (choices are provided for common species)
5. To what extent are wildlife habitat considerations included in discussions you have with NRCS or other conservationists? (four choices)
6. Question designed to elicit the respondent's attitude toward wildlife in relation to their operation.

Results of questions 1 and 2 can be used to help identify the conservation practices that are being used by producers to enhance wildlife habitat in and around cropland fields. Practices identified by landowners as important for wildlife habitat enhancement can then be targeted for evaluation and quantification as part of the CEAP Wildlife Component.

Results of question 3 provide estimates, from the landowners' perspective, of the on-site wildlife benefits derived from conservation practices they have installed specifically for wildlife enhancement purposes in and around cropland fields included in the NASS survey.

Results from question 4 can be used to help identify important wildlife species or groups to feature in quantitative evaluations of wildlife benefits achieved through conservation programs and practices.

Results from questions 5 and 6 are useful in estimating the extent to which practices are planned to address and/or enhance wildlife habitat. Some practices may provide significant benefits to wildlife only where wildlife habitat needs are considered in planning, whereas others may provide significant benefits regardless of whether or not

wildlife habitat needs were considered. By combining this information with the outcome of other quantitative studies to assess the wildlife benefits of various conservation practices, results from these questions will help identify the extent to which on-site wildlife benefits can be attained.

CEAP Wetlands Component - Biodiversity results

NRCS is working with a variety of partner agencies and groups to develop methods for reporting changes in wetland ecosystem services resulting from conservation practices (e.g., wetland restoration) supported by USDA conservation programs. The objective of the CEAP Wetlands Component (<http://www.nrcs.usda.gov/technical/nri/ceap/wetlands.html>) is to provide one-time regional measures of wetland ecosystem services “before” and “after” implementing wetland conservation practices. It also involves development of predictive wetland functional condition models to periodically assess changes in wetland ecosystem services nationally. Ecosystem services to be modeled include those related to water quality, sediment deposition, flood storage, carbon sequestration, and biodiversity.

Initial regional modeling efforts in the Prairie Pothole Region of the northern Great Plains and Mississippi Alluvial Valley show promise for developing a standardized approach capable of capturing the change in wetland ecosystem services associated with conservation practices while controlling for climatic variation and the resulting shifts in wetland biotic and abiotic conditions. These initial efforts are expected to yield biodiversity elements (modeling of local amphibian populations and waterbird habitat potential) useful in describing the wildlife response to wetland restoration and other practices. This and other output from the CEAP Wetlands Component assessments are expected to contribute significantly to the Wildlife Component objectives of quantifying wildlife benefits to conservation practices.

CEAP Grazing Lands Component

The CEAP Grazing Lands Component (<http://www.nrcs.usda.gov/technical/nri/ceap/grazing.html>) is intended to quantify the environmental effects of conservation practices used on pastureland and rangeland. Whereas the Wildlife Component seeks to assess fish and wildlife effects on all habitat types in agricultural landscapes (some of these efforts will be on grazing lands), elements of the Grazing Lands Component are likely to directly or indirectly capture fish and wildlife habitat elements within the suite of ecological services influenced by conservation practices applied to pasture and rangeland. The Grazing Lands Component is currently in the early stages of planning. Close coordination between the Wildlife Component and Grazing Lands Component in the future will ensure that opportunities to quantify the effects of conservation practices on fish and wildlife in grazing land settings are explored and exploited.

Farm Service Agency (FSA) CRP assessments

FSA is supporting specific regional projects to assess wildlife responses to CRP. Through this effort, FSA has funded several projects targeted to estimate the response of select wildlife populations (e.g., upland nesting ducks, ring-necked pheasants, northern bobwhites, grassland-nesting birds, prairie grouse, and freshwater mussels) to CRP enrollments (see <http://www.fsa.usda.gov/pas/FullStory.asp?StoryID=2079>). These projects are expected to generate useful outputs that fill some of the information gaps identified by the Wildlife Component. These outputs are expected to be useful in documenting wildlife population response to conservation practices installed on lands enrolled in CRP

Mississippi State University Bobwhite Restoration Project studies

The goal of the NRCS-Mississippi State University Bobwhite Restoration Project is to develop technology that assists NRCS field staff in future planning and to support research and demonstration projects that, within the context of the Northern Bobwhite Conservation Initiative (NBCI) habitat and population goals, evaluate the efficacy of NRCS conservation practices in restoration of northern bobwhite habitat and populations. Support for this project is provided through a Grants-in-Aid program from the NRCS Agriculture Wildlife Conservation Center that provides funding to institutions designing and implementing research and demonstration projects that specifically evaluate the efficacy of NRCS conservation practices and resource management systems deployed in a manner that achieves the habitat goals of the NBCI. Grants are to support evaluation of, and not implementation of, conservation practices and initiatives designed to accomplish the goals of the NBCI. In fiscal year 2004, 11 separate projects conducted at institutions throughout the southeastern U.S. were funded through this effort (see <https://hdclcl.cfr.msstate.edu/nbci/default.html> for a description of individual projects).

Utah State University Sage-grouse Restoration Project

NRCS initiative and Congressional directives have targeted NRCS conservation work on improving habitat quality for the sage-grouse on western working lands in recent years. To support this effort, NRCS is working with Utah State University to support projects that evaluate NRCS' ability to provide the technical assistance necessary to help prevent this species from further population declines. Conservation practices (e.g., prescribed grazing, water development, brush management, prescribed burning) are being evaluated for their effect on sage-grouse habitat and, where needed, new technology is being developed for practices that enhance and restore sage-grouse habitat. This project will provide current information on the role of existing conservation practices and technologies relative to conserving sage-grouse and other sagebrush obligate species. The Sage-grouse Restoration Project includes a grants-in-aid program that provides funds for the design and implementation of research and demonstration projects that evaluate

and communicate the effectiveness of 2002 Farm Bill conservation practices and technology in restoring or enhancing sage-grouse habitat on private lands. Specific projects are described at <http://www.sgrp.usu.edu/>).

CP33 Upland Buffers Habitat Monitoring

USDA-FSA Notice CRP-479 provides policy for CRP continuous signup practice CP33—Habitat Buffers for Upland Wildlife. The notice specifies that:

“A monitoring and evaluation plan must be developed in consultation with the state technical committee, including the U.S Fish and Wildlife Service, State Fish and Game agencies, and other interested quail parties. The plan must provide the ability to establish baseline data on northern bobwhite populations and estimate increasing bobwhite populations and impact on other upland bird populations as a result of practice CP33, Habitat Buffers for Upland Birds, including implementing a statewide sampling process that will provide reliable estimates of the number of bobwhites per acre (or some other appropriate measure) before practice CP33 is implemented (baseline) and the number resulting from the established CRP cover.”

The Research Committee of the Southeast Quail Study Group developed a national protocol for monitoring northern bobwhite response to CP33 that can be deployed through a combined effort of state offices of FSA/NRCS and state resource management agencies in such a manner to: 1) provide statistically valid estimates of northern bobwhite density (or some other appropriate measure) on fields enrolled in CP33 at state, regional, and national levels, and 2) provide a measure of the relative effect of size of the CP33 practice (Burger et al. 2004). Where these efforts yield reliable estimates of the response of northern bobwhite to upland buffer practices, such estimates will be acknowledged and captured by the CEAP Wildlife Component. (See <http://teamquail.tamu.edu/publications/HabitatBuffersforUplandBirdsCP33.pdf>)

State Comprehensive Wildlife Conservation Strategies

In order to receive funds from the State Wildlife Grants program administered by the U.S. Fish and Wildlife Service, each state was required to produce a Comprehensive Wildlife Conservation Strategy by October 2005 (see http://www.teaming.com/state_wildlife_strategies.htm). These strategies identify priority wildlife species and habitat areas, assess threats to their survival, and identify actions to conserve them over the long term. State fish and wildlife agencies developed these strategies by engaging a broad array of partners, including other government agencies, conservation groups, private landowners, and the general public. States are required to develop plans for monitoring species of greatest conservation need, and their habitats, to determine the effectiveness of conservation actions, and for adapting these conservation actions to respond appropriately to new information and changing conditions. Monitoring components of these plans that have relevance to the CEAP Wildlife Component objectives will be considered and captured in outcomes where feasible.

Audubon's Birds and Agriculture Program

This is a broad-based program aimed at exploring the impacts of agricultural production practices on birds, demonstrating how production systems and conservation programs can be used to make working lands more hospitable to birds, and in increasing the agriculture community's awareness of how it can support bird populations and habitats as it produces food and fiber. One of the program's specific objectives is to document the impact of agricultural production systems and conservation practices on bird populations on working lands. Where applicable, outcomes from this effort will be incorporated into assessment efforts of the CEAP Wildlife Component.

<http://www.audubon.org/bird/pdf/BirdsAndAgriculture.pdf>

Compile NRCS Institutes findings

Prior to its reorganization in 2004, NRCS operated a number of discipline-specific science and technology institutes designed primarily to develop technical materials needed by NRCS field conservation planners. Several of these institutes (Wildlife Habitat Management Institute, Wetland Science Institute, Watershed Science Institute) were involved in studies that assessed fish and wildlife response to conservation practices in order to develop more effective approaches to addressing fish and wildlife needs in conservation planning and practice implementation. The newly-established NRCS Agriculture Wildlife Conservation Center (AWCC - <http://www.whmi.nrcs.usda.gov/>) is continuing this work through competitive grants to organizations and institutions involved in wildlife technology development. Although these projects are primarily directed at technology development, many have generated and will continue to produce useful information documenting fish and wildlife response to the practices studied. Examples of the information gathered through these efforts include the response of grassland birds, northern bobwhites and butterflies to field borders and other buffer practices, changes in stream fish assemblages following riparian buffer establishment,

response of amphibians and other wildlife to wetland restoration and associated microtopography development, and response of upland nesting birds to various vegetation management regimes on lands enrolled in CRP. An example of current AWCC coordination with CEAP is the effort with USGS to develop use of NOAA NEXRAD Doppler weather data to assess bird use of restored wetlands, described above. Information gathered from technology development projects that relates to assessing how fish and wildlife responds to conservation practices will be compiled and included in CEAP Wildlife Component reporting.

Anticipated Outcomes

Fish and wildlife resources that are potentially affected by USDA programs and conservation practices consist of thousands of taxa on a wide diversity of habitats. The multi-dimensional effects of the variety of conservation practices across the spectrum of fish and wildlife species affected are extremely difficult to condense into simple national or aggregate measures of benefit. Therefore, prominent species that have been sufficiently studied and for which conservation practices are likely important habitat factors are the initial primary targets of the CEAP Wildlife Component. Some of these species, such as prairie-nesting ducks, may be suitable for regional modeling capable of quantifying population response to conservation programs. These and other measures of fish and wildlife response generated from the efforts described above will be compiled by staff of the NRCS Resource Inventory and Assessment Division to provide a complete picture of documented benefits across the country, to the extent possible. A general timeline for conducting assessments and generating outcomes is outlined in Table 5.

This work plan provides the basic structure of the CEAP Wildlife Component. While future funding to address high priority assessment needs is anticipated, the outlook on out-year budgets remains uncertain. While NRCS intends to pursue funding support for these efforts in the future, effective implementation of the CEAP Wildlife Component will continue to rely on the data and human resources of partner agencies and organizations. Periodic accomplishment reports and fish and wildlife outcome products are anticipated, along with regular updates to this work plan. Future assessment projects will be identified through on-going communication with regional groups and initiated through appropriate administrative instruments (e.g., contribution agreements, interagency agreements, cooperative agreements within the Cooperative Ecosystem Studies Units network, etc.). As additional CEAP Wildlife Component-funded assessments are initiated and other related efforts are identified, this work plan will be updated to include these activities.

The intent of the CEAP Wildlife Component is to remain flexible enough to respond to changes in assessment priorities and developing technologies useful in accurately assessing the effects of current and future conservation programs and practices on fish and wildlife resources.

Table 5. Timeframe of activities and expected outcomes from the CEAP Wildlife Component.

Year	Month	Action/product/outcome
2005	April-December	Conduct briefings with Regional Associations and conduct regional workshops to develop regional priorities and approaches 9/21/05 – Hancock, NH; 10/17/05 – St. Louis, MO; 12/12/05 – Grand Rapids, MI;
	September	Present Phase I Literature review at TWS Symposium
	November	Phase I Program-based Literature Synthesis complete
		Component approach developed
2006	Jan-Dec	Conduct follow-up briefings and workshops to develop and refine regional priorities and approaches 1/26/06 – Phoenix, AZ; 3/23/06 – Columbus, OH; 4/24/06 – Burlington, VT; 5/16/06 – Aberdeen, SD; 7/25/06 – Bismarck, ND; 11/7/06 – Norfolk, VA
	April-August	Finalize initial regional priorities and national work plan
		Establish interagency partnerships and complete agreements with other organizations to implement work plan elements
	September	Phase II Practice-based Literature Review and Synthesis
		The Nature Conservancy IPA position filled
	October	Complete NatureServe Missouri pilot project Complete University of Northern Colorado bird studies
December	Compile all components into preliminary estimates of wildlife benefits	
2007	January-September	Revise regional priorities and amend work plan as needed

2008		Establish interagency partnerships and complete agreements with other organizations to implement work plan elements
		Update and compile output from regional work elements
	September	Update findings from ongoing and related projects
	December	Compile all elements into estimates of wildlife benefits

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