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# Environmental Quality Incentives Program Contributions to Fish and Wildlife Conservation

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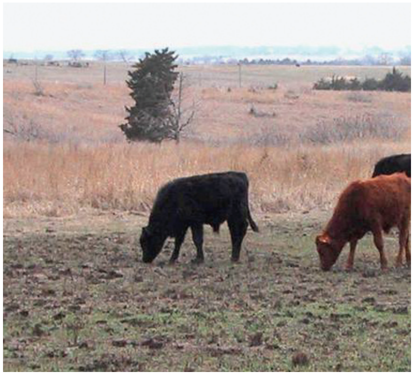
## Abstract

*The Environmental Quality Incentives Program (EQIP) is a voluntary program whereby the U.S. Department of Agriculture provides technical and financial assistance to active farmers and ranchers to address natural resource concerns such as soil conservation, water quality and quantity, nutrient management, and fish and wildlife habitat. The Natural Resources Conservation Service (NRCS) is working with these landowners to maximize the environmental benefits gained for the expenditures made in the program. Funding has expanded significantly under the 2002 Farm Bill, with the amount of annual funding authorized reaching $1.3 billion by fiscal year 2007. The EQIP has been used to implement a wide variety of practices that are considered beneficial to many species of fish and wildlife. The NRCS is also beginning to use EQIP to address the needs of declining and other at-risk fish and wildlife species. Few data are available that document fish and wildlife response to EQIP. Program implementation to date is summarized, and recent information on planning of practices with the potential to benefit fish and wildlife resources is examined.*

## Introduction

Since the 1940s, agricultural production has transformed landscapes in North America and elsewhere (National Research Council 1989). Production systems and advancing technology have enabled greater commodity outputs necessary to feed a growing global population. These changes have also generated concern regarding environmental and ecological degradation associated with modern agriculture (Freemark

1995). Beginning with the Conservation Title of the 1985 Food Security Act, U.S. Department of Agriculture (USDA) conservation programs have been largely targeted toward addressing these concerns.



Fire and livestock grazing are used to create structural heterogeneity in tallgrass prairie. (S. Fuhlendorf, Oklahoma State University)

Set-aside programs that remove parcels of land from crop production have been an effective means of providing wildlife habitat on agricultural landscapes (Van Buskirk and Willi 2004). Farm Bill conservation programs that involve set-aside or land retirement, such as the Conservation Reserve Program (CRP) and Wetlands Reserve Program (WRP), are recognized for providing fish and wildlife habitat benefits (see papers on these programs elsewhere in this volume).

Sustainable farming measures and practices applied within and around active croplands such as grassed waterways, field borders, hedgerows and other conservation buffers, and certain cultural practices have been recognized for providing wildlife habitat on agricultural landscapes (Carlson 1985, Jahn and Schenck 1991). Similarly, integrating grazing practices based on ecological principles on rangelands can be an effective means of supporting fish and wildlife populations on grazing lands used for livestock production (Fuhlendorf and Engle 2001).

The Environmental Quality Incentives Program is USDA's primary cost-share program for assisting farmers and ranchers to address natural resource issues on working croplands and rangelands they own and manage. All land-management actions have the potential to affect fish and wildlife resources in some way. Targeted toward America's production-oriented cropland, rangelands, and forests, EQIP has the potential to provide significant benefits to fish and wildlife associated with these largely private lands. Esser et al. (2000) recognized this potential in their description of the program during the first few years of operation. This paper updates program implementation information and summarizes literature describing EQIP benefits to fish and wildlife resources.

## Program Description

The Natural Resources Conservation Service works cooperatively with agricultural producers to deliver EQIP. Established in the 1996 Farm Bill, the program provides cost-share and technical assistance to farmers and ranchers through voluntary contracts to address threats to soil, water, and related natural resources, including grazing lands, wetlands, and wildlife habitat. Appendix 1 contains the program purposes as defined by the 2002 Farm Bill.

Structural and management practices included in conservation plans developed by NRCS or qualified technical service providers are eligible for up to 75% cost-share (up to 90% for beginning and limited resource producers). General descriptions of various program elements, along with key program changes made by the 2002 Farm Bill, are provided in Table 1. Additional information on the specifics of program operation is provided at <http://www.nrcs.usda.gov/programs/eqip>.

Table 1. Comparison of Environmental Quality Incentives Program elements between the 1996 and 2002 Farm Bills.

| Program element | 1996 Farm Bill | 2002 Farm Bill |
|---|---|---|
| Authorized funding level | $200 million/year | Fiscal Year (FY) 2003: $700 million<br>FY 2004: $1 billion<br>FY 2005: $1.2 billion<br>FY 2006: $1.2 billion<br>FY 2007: $1.3 billion |
| Cost-share level | Up to 75% of client cost | Up to 75% of client cost; up to 90% cost-share for limited resource and beginning farmers and ranchers |
| Program targeting | Funding targeted to geographic priority areas | No required geographic targeting |
| Contract duration | 5 to 10 years | 1–10 years after practice installation |
| Payment limits to participants | $10,000 per year<br>$50,000 per contract | $450,000 per individual or entity |
| Program funds targeted to livestock operations | At least 50% | 60% target |
| Eligibility of large confined animal-feeding operations | Ineligible for cost-share on animal waste storage and treatment | Eligible for cost-share on animal waste storage and treatment when part of a comprehensive nutrient-management plan |

## Program Funding and Enrollment

Authorized funding levels for EQIP have increased substantially under the 2002 Farm Bill. However, there remains far greater demand for the program than it can address (Table 2). As directed by statute, greater than 50% of funds are being directed to address natural resource concerns related to livestock operations. Approximately 75% of cost-share payments made during fiscal year (FY) 2004 were in support of practices relating to animal waste practices and fencing, soil erosion and sediment control, and irrigation (Table 3).

Table 2. Contract and fund obligation information for Environmental Quality Incentives Program during fiscal years 2002–2004.

| Program activity | Fiscal year | | |
|---|---|---|---|
| | 2002 | 2003 | 2004 |
| No. of contracts established | 19,817 | 30,251 | 46,413 |
| Cost-share funds obligated | $322,193,226 | $483,483,746 | $718,150,476 |
| Livestock-related cost-share obligated | no data | $323,053,083 | $449,558,698 |
| No. of unfunded applications | 70,495 | 174,062 | 135,394 |
| Unfunded cost-share | $1,486,944,435 | $3,070,533,611 | $2,204,438,291 |

Source: USDA System 36 database.

Table 3. Payments made during fiscal year (FY) 2004 for practices approved in contracts accepted into the program during FY 1997–2004.

| Practices related to: | Amount disbursed |
|---|---|
| Animal waste practices, plus fencing | $68,130,224 |
| Soil erosion and sediment control | $58,292,173 |
| Irrigation practices | $76,220,632 |
| Grazing lands practices | $44,057,740 |
| Total[a] | $269,225,386 |

Source: USDA System 36 database.

[a] Approximately $22 million was provided for practices in other categories.

A wide variety of structural and cultural conservation practices are cost-shared through EQIP to address a broad range of natural resource issues on active agricultural operations. Appendix 2 provides a list of practices planned and applied during FY 2004. While the information provided in Appendix 2 applies to just 1 year of program activity, it provides an illustration of the diversity of practices supported by the program. For further illustration, practices generally recognized as providing substantial potential to directly benefit fish and wildlife are highlighted.

The majority of EQIP planning activity during FY 2004 centered on addressing soil and water resource concerns in dry-land and irrigated cropping operations and grazing systems. Livestock production facility practices planned during FY 2004 include 14,487 barnyard runoff management systems, 3,805 composting facilities, 101,184 manure transfer facilities, 22,999 roof runoff structures, 235,909 waste storage facilities, and 241,572 livestock watering facilities (Appendix 2). Cropland system practices planned in FY 2004 include 258,048 irrigation systems, over 2,631 miles of irrigation water conveyance ditches and pipelines, nutrient management plans on nearly 3.9 million acres, over 6,789 miles of pipeline, residue management plans on over 2.8 million acres, nearly 558 miles of subsurface drains, 4,739 miles of terraces, over 642 miles of underground outlets, and over 934 miles of windbreak/shelterbelts to be established. Practices planned on grazing lands include over 13,788 miles of fence and prescribed grazing on over 9 million acres (Appendix 2).

Rangeland watering trough for livestock. (G. Wilson, USDA-NRCS)

## Fish and Wildlife Benefits

Esser et al. (2000) found no specific assessments documenting fish and wildlife response to EQIP. Our review of the literature did not identify any significant assessments conducted since 2000 specifically related to EQIP. However, our appreciation for the potential of EQIP-funded practices to support a wide variety of fish and wildlife continues to emerge. We present several examples of habitat improvements and other practices where EQIP is being used to the benefit of fish and wildlife resources.

### *Invasive Species*

Invasion of native ecosystems by non-indigenous species has become a major issue influencing the integrity of natural ecosystems and the welfare of native plants and animals they support (Westbrooks 1998). In an effort to address the growing problem of invasive species control and management, EQIP is beginning to support projects that control invasive species as a primary concern (Figure 1). Although the number of contracts affected is still a small percentage of contracts established in FY 2004 (<0.5%), the potential for the use of EQIP to address invasive species issues is apparent. In some instances, the impact of invasive species is the primary limiting factor for fish and wildlife populations.

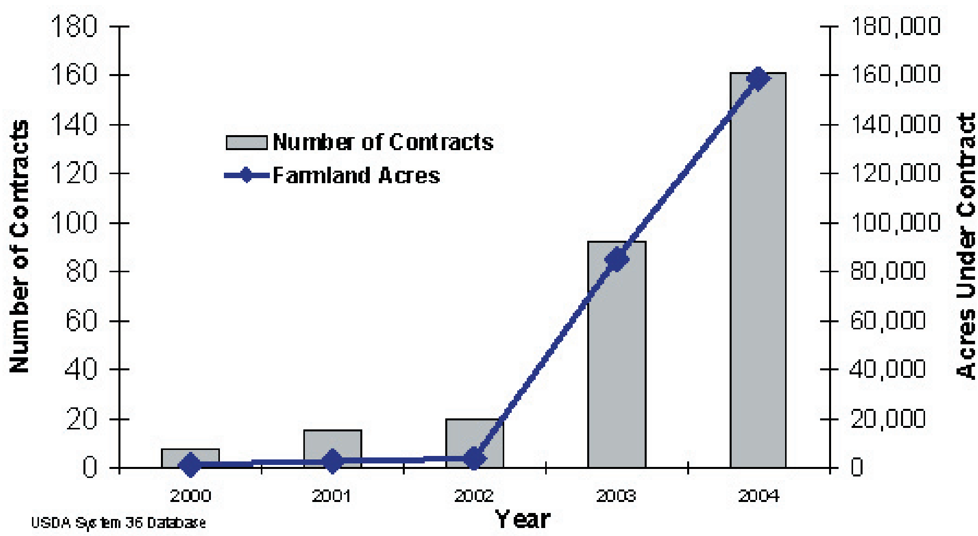



Figure 1. Number of EQIP contracts and acres under contract. Primary resource concern: invasion of non-indigenous species, 2000–2004.

### *Threatened and Endangered Species*

Whereas the majority of EQIP practices address other resource concerns as described above, EQIP is also being used to address habitat needs of threatened, endangered, and other at-risk plant and animal species. Figure 2 illustrates the growth of the use of EQIP in recent years to address threatened and endangered species needs. The acres under contract reflect the total acreage of farm or ranch lands associated with contracts enrolled under this objective; an unknown percentage of acres under contract were actually treated to address listed species needs. The increase in use of EQIP to address listed species reflects the increasing focus NRCS is placing on targeting at-risk and declining species. A variety of practices are being applied to benefit a diversity of listed species across the country, and the geographic distribution of these practices aligns with where opportunities to affect listed species exist (Figure 3).

Figure 2. Number of EQIP contracts and acres under contract. Primary resource concern: threatened and endangered species, 2000–2004.

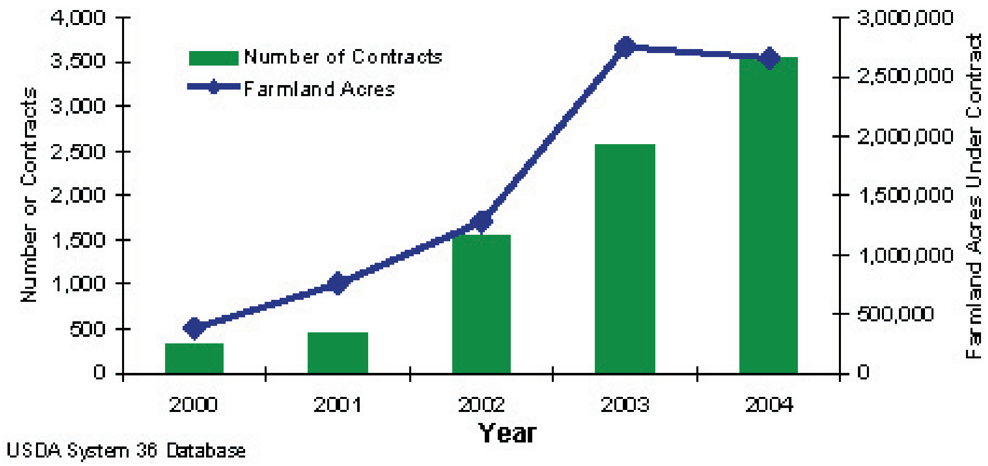
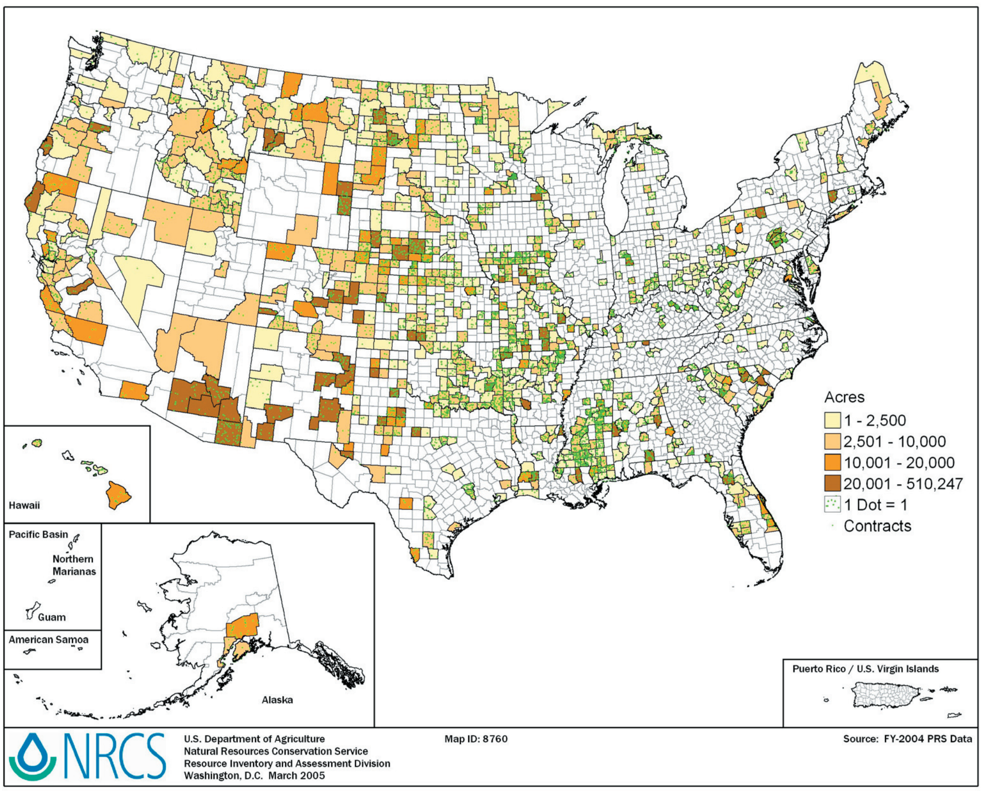



Figure 3. EQIP acres of land where threatened and endangered species was a primary resource concern, 2000–2004.



One example of the use of EQIP to benefit at-risk species is the case of the arctic grayling (*Thymallus arcticus*), a species that is a candidate for listing as threatened within its range in Montana and Wyoming. The arctic grayling is a salmonid that requires high-quality, cold-water streams and lakes to survive. Practices funded by EQIP helped arctic grayling survive in Montana during severe drought conditions. In June 2003, landowners along Montana's Big Hole River agreed to shorten their irrigation season on 14,304 acres of agricultural land to maintain river flows to support this fish. Landowners received nearly $800,000 in EQIP cost-share funds to implement water-conservation practices in the watershed. Irrigators ceased water withdrawal early and installed 12 new off-stream livestock water facilities to enable restriction of livestock access to the stream. Typical low-water flows in the Big Hole River occur at the end of August. In recent years, water levels have dropped to as low as 6 cubic feet per second (cfs) in late summer; artic grayling need a minimum of 20 cfs of flow to survive in this reach. On 10 August 2003, water levels were at 28 cfs, a level twice as high as the previous year. Montana's Fish and Wildlife and Parks biologists gave EQIP much of the credit for helping the artic grayling survive the drought and perhaps helping to keep the species off the endangered species list.

The NRCS is currently using EQIP to support the Colorado River Basin Salinity Control Program by working with producers in to implement on-farm salinity control measures in 6 project areas in western Colorado, eastern Utah, and southwestern Wyoming. Wildlife conservation and mitigation measures are included. Additional information on EQIP activities in these salinity areas can be accessed at <www.usbr.gov/uc/progact/salinity/index.html> and <www.nrcs.usda.gov/programs/salinity/>.

Farmers and ranchers in the Klamath Basin in Oregon and California are working with conservation agencies and organizations to address water needs to sustain environmental quality and agricultural production. EQIP is among the programs providing direct assistance to producers to address water flow issues to benefit threatened and endangered fish species. See that following web pages for additional information on conservation efforts in the Klamath Basin: <http://www.nrcs.usda.gov/feature/klamath/images/BrochureProgressReport2004.pdf> and <http://www.nrcs.usda.gov/feature/klamath/klamplan.html>.

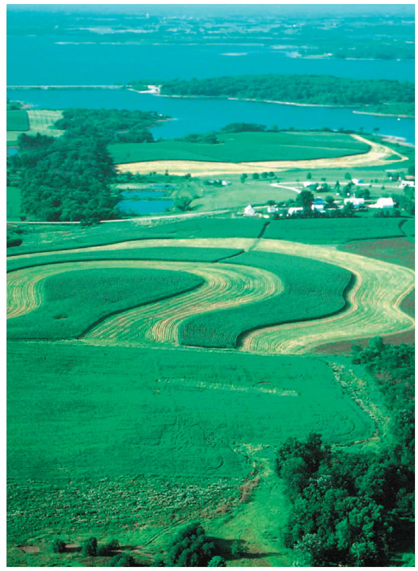
In FY 2005, NRCS is increasing emphasis on assisting producers implement measures to benefit the greater sage-grouse (*Centrocercus urophasianus*), a species that has been declining in recent decades and has been considered for listing under the Endangered Species Act. In response to congressional language encouraging USDA to enhance its efforts for greater sage-grouse conservation, NRCS is making $2 million of EQIP funds available for projects to address sage-grouse habitat in FY 2005.

### *In-field Conservation Practices*

Many conservation practices applied to cropping systems have direct and indirect benefits to fish and wildlife. Practices that reduce soil erosion and sediment loss to streams invariably help protect surface water quality necessary for healthy stream biota (Robinson 1990). Estimates of soil-erosion rates on croplands show a reduction of 42% between 1982 and 2001 (USDA Natural Resources Conservation Service, National Resources Inventory data). Nearly all of this reduction has been due to the application of conservation practices, including those cost-shared under EQIP. Practices that provide food and cover for upland wildlife in crop fields are also beneficial to terrestrial species in intensively managed agricultural landscapes.

Miranowski and Bender (1982) identified wildlife benefits from the installation of conservation practices that reduce soil erosion. They concluded that by reducing soil loss from 8.3 tons/acre to 5.2 tons/acre through the use of conservation tillage, their general wildlife habitat index score for an agricultural landscape within the Iowa River Basin was raised from 0.08 to 0.15. By installing other conservation practices to reduce soil loss in addition to conservation tillage, their habitat index score was raised to 0.30. In croplands in Saskatchewan, minimally tilled crop fields have been shown to support higher relative abundance of birds than conventionally tilled fields (Shutler et al. 2000). Although tillage operations may result in some mortality, others have documented the benefits of conservation tillage to nesting birds and other wildlife over conventional tillage operations (Rodgers and Wooley 1983, Warburton and Klimstra 1984, Duebbert and Kantrud 1987, Best 1986, Lokemoen and Beiser 1997, Martin and Forsyth 2003).

Warner and Brady (1994) indicated that the net effect of a combination of conservation practices (i.e., conservation system) may be beneficial to wildlife. Their conservation system of practices included conservation tillage, contour strip cropping, grassed backslope terraces, and field borders. When properly operated and maintained, most conservation practices can benefit wildlife. Grassed waterways, farmstead windbreaks, crop rotations, and effective nutrient and tillage management can provide wildlife cover while reducing the delivery of sediments and related pollutants to riparian, wetland, and other aquatic habitats (Robinson 1988, 1990). Structural and cultural conservation practices installed through incentive programs such as EQIP and/or applied to meet conservation compliance requirements (Brady, *this volume*) result in sustainable agricultural systems that provide greater benefits to many species of fish and wildlife than conventional systems (Jahn and Schenck 1991). As noted, individual conservation practices have been shown to provide fish and wildlife habitat. Although additional study is needed to document the combination of practices on wildlife (Freemark 1995), the cumulative effect of a system of conservation practices applied to landscapes that are intensively used and managed for crop production is likely much more effective than application of individual practices.

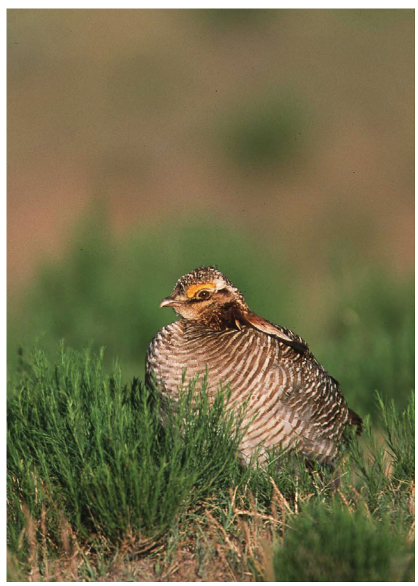


Contour strip cropping to reduce erosion. (L. Betts, USDA-NRCS)

Conservation practices planned during FY 2004 reveal the potential of EQIP to improve fish and wildlife habitat conditions in cropped landscapes (Appendix 2). Buffer practices such as field borders (over 432 miles planned), grassed waterways (104,315 acres), riparian forest buffers (7,178 acres) and windbreak/shelterbelts (over 934 miles planned) provide habitat structure and water-quality functions. In-field practices such as nutrient management (over 3.8 million acres planned) and residue management (over 2.8 million acres planned) help reduce soil erosion and sediment and excess nutrient transport to waterways. With proper planning, EQIP has the potential to positively affect millions of acres of cropland habitats.

### *Rangeland Practices*

Rangeland systems of the United States have been impacted by a variety of factors, including elimination of native grazers, introduction of tame grasses and domestic livestock, suppression of fire, conversion to cropland, and other modifications associated with human habitation and development (Knight et al. 2002). Restoring heterogeneity to homogenized range landscapes to echo conditions that occurred before European settlement has been suggested as a means of promoting biological diversity and wildlife habitat on rangelands used by domestic livestock (Fuhlendorf and Engle 2001). Practices such as rotational grazing and controlled patch burning can be used to foster disturbance regimes that have historically driven natural rangeland ecology (Fuhlendorf and Engle 2004).



Lesser prairie-chicken in New Mexico. (G. Kramer, USDA-NRCS)

A number of EQIP practices have great potential to contribute to increasing the extent and heterogeneity of fish and wildlife habitat quality on rangelands. Although these practices can benefit a wide variety of species associated with rangelands, EQIP has also been recognized for its potential to specifically improve habitat conditions for high-priority wildlife such as prairie grouse (sage-grouse, prairie-chickens [*Tympanuchus* spp.], sharp-tailed grouse [*Tympanuchus phasianellus*]) (Riley 2004). This is primarily because the majority of EQIP funds are targeted toward addressing natural resource issues related to livestock production, and funding levels are significant compared to other public and private efforts engaged in prairie grouse conservation matters. Practices planned during FY 2004 that provide fish and wildlife habitat potential on grazing lands include brush management (over 1.4 million acres planned), fencing (13,788 miles planned), prescribed burning (200,806 acres planned), and prescribed grazing (over 9 million acres planned). Although these practices have substantial potential to provide habitat value, there is not an effective way of characterizing how fish and wildlife habitat was factored into the thousands of plans involved. Since EQIP is targeted to a range of natural resource concerns, habitat considerations may or may not have a great influence on the specifications that guide how individual practices are planned and installed.

### *Habitat Practices*

Many multipurpose conservation practices have the potential to provide significant benefits to fish and wildlife, as described above (e.g., conservation cover, field borders, riparian forest buffers, hedge rows, prescribed grazing and burning, conservation tillage, etc.—see practices in bold print in Appendix 2). There are also a number of practices with purposes weighted more heavily toward fish and wildlife resource concerns. These practices are more likely to be designed in a manner that will provide greater fish and wildlife benefit per unit effort than other more general purpose practices. Data from Appendix 2 were extracted to construct Table 4, which illustrates the level of effort supported by EQIP during FY 2004 directed toward these fish and wildlife–oriented practices.

Table 4. Practices with fish and wildlife resource concerns as the primary objective planned and applied under the Environmental Quality Incentives Program during fiscal year (FY) 2004.

| Conservation practice (units) | NRCS code | Planned[a] | Applied[b] |
|---|---|---|---|
| Early successional habitat development/ management (acres) | 647 | 2,746 | 173 |
| Fish passage (no.) | 396 | 5 | 1 |
| Fishpond management (no.) | 399 | 46 | 34 |
| Restoration and management of declining habitats (acres) | 643 | 3,270 | 107 |
| Riparian herbaceous cover (acres) | 390 | 804 | 79 |
| Shallow water management for wildlife (acres) | 646 | 6,549 | 1,381 |
| Stream habitat improvement and management (acres) | 395 | 8,119 | 2,320 |
| Upland wildlife habitat management (acres) | 645 | 973,119 | 1,345,495 |
| Wetland creation (acres) | 658 | 205 | 101 |
| Wetland enhancement (acres) | 659 | 827 | 167 |
| Wetland restoration (acres) | 657 | 1,088 | 9,582 |
| Wetland wildlife habitat management (acres) | 644 | 15,100 | 26,097 |
| Wildlife watering facility (no.) | 648 | 191 | 35 |

Source: NRCS Performance Results System.

[a] Practices planned during FY2004 that were approved for cost-share under EQIP contracts.

[b] Practices approved for cost-share under EQIP contracts established in FY 2004 or prior years and installed during FY 2004.

Over 99% of the acreage reported in Table 4 is encompassed by the Upland Wildlife Habitat Management practice. This is an umbrella practice that encompasses a broad array of upland habitat establishment and management actions to support many different types of upland wildlife. Without knowing the specifics contained in the many EQIP conservation plans involving this practice, it is difficult to draw conclusions on the type of benefits that are being realized by the program.

There are several conservation programs that, while different from EQIP, have some similarity in purpose. Primary objectives of the Wildlife Habitat Incentives Program (WHIP) and WRP are to promote fish and wildlife habitat. EQIP has multiple resource objectives including reducing soil erosion and improving water quality, along with addressing fish and wildlife habitat concerns. As previously stated, EQIP is oversubscribed. When developing conservation plans with clients, planners may direct participants who are primarily interested in fish and wildlife to programs such as WHIP or WRP, provided their lands are eligible for enrollment in these programs. Alternatively, since WHIP and WRP are also oversubscribed (Gray et al., *this volume*; Rewa, *this volume*), planners may work to integrate fish and wildlife habitat considerations into EQIP conservation plans, thereby increasing habitat benefits achieved through EQIP.

As the growth of EQIP has expanded over the years (Table 2), so has its capability to improve fish and wildlife habitats. While the majority of practices are targeted toward soil and water conservation, nutrient management, and other production-oriented conservation practices (Table 3), EQIP is being used to put a significant amount of habitat on the ground. The fish and wildlife–oriented practices presented in Table 4 represent a small fraction of the overall EQIP effort (see Appendix 2). However, wildlife work in EQIP for some practices is comparable to the effort being made by WHIP (e.g., Upland Wildlife Habitat Management practice FY 2004 planning for EQIP and WHIP was reported as 973,119 acres and 659,735 acres, respectively). For other practices, EQIP contributions are substantially less than the more fish and wildlife–targeted WHIP (e.g., the number of fish passage structures reported as planned in FY 2004 under WHIP and EQIP were 106 and 5, respectively). An important note is that many EQIP practices planned may be subsequently withdrawn and not implemented by producers. For example, approximately 14.6% of wildlife habitat related practices contracted under EQIP between 1997 and 2000 were withdrawn (Cattaneo 2003). Since participants in programs such as WHIP are primarily interested in fish and wildlife habitat management, withdrawal rates are likely substantially lower.

## Knowledge Gaps

Esser et al. (2000) concluded that additional monitoring and research was needed in 2000 to adequately assess the value of practices installed under EQIP to fish and wildlife. Our review of the literature indicates that that need remains unmet. Specifically, a more concerted effort is needed to assess the effects of all conservation practices supported by EQIP and other conservation programs on fish and wildlife response. Practice data presented in this paper will assist literature reviewers currently working with The Wildlife Society to characterize fish and wildlife response to specific conservation practices (to be produced as a companion document to this publication). In addition, efforts are being made through the USDA Conservation Effects Assessment Project to develop protocols for assessing fish and wildlife benefits provided by conservation practices installed under EQIP and other conservation programs.

Where EQIP is used to target specific fish and/or wildlife issues, studies are needed to document how the taxa targeted respond to program efforts. EQIP is a large program affecting millions of acres of agricultural lands every year. Better means of tracking projects with the primary purpose of benefiting fish and wildlife are needed, including details on what species are targeted and what measures are undertaken to benefit those species. For example, better information on actions taken under the Upland Wildlife Habitat Management practice is needed to determine how fish and wildlife response can be assessed. Conservation plans and contracts under EQIP require completion of environmental evaluations (on Form CPA-52). Data used for these evaluations and documentation of proposed effects need to be collected and analyzed.

## Conclusion

The use of agricultural landscapes in the United States for production of food and fiber is likely to continue into the foreseeable future. Measures to integrate conservation of fish and wildlife and other natural resources into the production of crops and livestock are being taken to foster biodiversity on and sustainability of these agricultural lands. The welfare of many species of fish and wildlife depends on the ability of agricultural landscapes to provide habitats necessary for survival (Peterjohn 2003). Voluntary efforts of producers through conservation plans and practices supported by EQIP can play a major role in restoring and maintaining wildlife habitats on actively managed croplands and rangelands.

The significant funding made available for EQIP by the 2002 Farm Bill makes the program a significant tool for landowners and natural resource managers concerned with fish and wildlife conservation. With proper planning, fish and wildlife habitat can be emphasized in EQIP while addressing soil and water resource concerns. While data are lacking on how wildlife has responded to EQIP to date, practices targeted to address declining or at-risk and other fish and wildlife imply that substantial benefits are being realized through the program. Additional study is needed to document the extent and character of these benefits.

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# Appendix 1. EQIP program purposes as defined by the Farm Security and Rural Investment Act of 2002 (2002 Farm Bill).

## SEC. 1240. [16 U.S.C. 3839aa] PURPOSES

The purposes of the environmental quality incentives program established by this chapter are to promote agricultural production and environmental quality as compatible goals, and to optimize environmental benefits, by—

(1) assisting producers in complying with local, State, and national regulatory requirements concerning—

(A) soil, water, and air quality;
(B) wildlife habitat; and
(C) surface and ground water conservation;

(2) avoiding to the maximum extent practicable, the need for resource and regulatory programs by assisting producers in protecting soil, water, air, and related natural resources and meeting environmental quality criteria established by Federal, State, tribal, and local agencies;

(3) providing flexible assistance to producers to install and maintain conservation practices that enhance soil, water, related natural resources (including grazing land and wetland), and wildlife while sustaining production of food and fiber;

(4) assisting producers to make beneficial, cost effective changes to cropping systems, grazing management, nutrient management associated with livestock, pest or irrigation management, or other practices on agricultural land; and

(5) consolidating and streamlining conservation planning and regulatory compliance processes to reduce administrative burdens on producers and the cost of achieving environmental goals.

# Appendix 2. Practices planned and applied under EQIP during FY 2004.

While all practices potentially affect fish and wildlife, practices generally recognized for the potential to directly benefit fish and wildlife are identified by bold text.

| Conservation Practice (NRCS practice code) (units reported) | Planned | Applied |
|---|---|---|
| Access Road (560) (ft) | 1,755,377 | 359,001 |
| Agrichemical Mixing Facility (702) (no) | 151,313 | 10,618 |
| Agrichemical Mixing Station, Portable (703) (no) | 600 | |
| Agricultural Fuel Containment Facility (701) (no) | 2,985 | 9 |
| Agro Tillage (761) (ac) | | 7 |
| Air Management (705) (ac) | 207,336 | 24,834 |
| Alley Cropping (311) (ac) | 820 | 716 |
| Alum treatment of Poultry Litter (786) (no) | 3,519 | 267 |
| Anaerobic Digestor, Ambient Temperature (365) (no) | 2 | 1 |
| Anaerobic Digestor, Controlled Temperature (366) (no) | 4 | |
| Animal Mortality Facility (316) (no) | 1,723 | 54 |
| Animal Trails and Walkways (575) (ft) | 259,912 | 67,165 |
| Anionic Polyacrylamide (PAM) Erosion Control (450) (ac) | 8,546 | 659 |
| Aquaculture Ponds (397) (ac) | 1,831 | |
| Atmospheric Resource Quality Management (370) (ac) | 1,514 | 0 |
| Barnyard Runoff Management (707) (no) | 14,487 | 31 |
| Bedding (310) (ac) | 17 | 98 |
| Bio-Filter (793) (no) | 3 | |
| **Brush Management (314) (ac)** | **1,465,377** | **364,950** |
| Channel Bank Vegetation (322) (ac) | 1,271 | 12 |
| Channel Stabilization (584) (ft) | 33,217 | 4,822 |
| Cistern (708) (no) | 7 | |
| Clearing and Snagging (326) (ft) | 4,100 | 2,000 |
| Closure of Waste Impoundment (360) (no) | 930 | 45 |
| Composting Facility (317) (no) | 3,805 | 2,975 |
| **Conservation Cover (327) (ac)** | **10,366** | **6,341** |
| Conservation Crop Rotation (328) (ac) | 901,806 | 551,302 |
| Constructed Wetland (656) (no) | 4 | |

| **Conservation Practice (NRCS practice code) (units reported)** | **Planned** | **Applied** |
|---|---|---|
| Contour Buffer Strips (332) (ac) | 565 | 650 |
| Contour Farming (330) (ac) | 73,535 | 58,856 |
| Contour Orchard and Other Fruit Area (331) (ac) | 756 | 830 |
| Controlled Stream access for Livestock Watering (730) (no) | 3,570 | 630 |
| Corral Dust Control (no. and ac.) (785) (no) | 1,205 | 184 |
| Cover Crop (340) (ac) | 274,013 | 75,597 |
| Critical Area Planting (342) (ac) | 27,968 | 6,064 |
| Cross Slope Farming (733) (ac) | 161 | |
| Cross Wind Ridges (589A) (ac) | 1,096 | 1,732 |
| Cross Wind Stripcropping (589B) (ac) | 319 | |
| Cross Wind Trap Strips (589C) (ac) | 956 | 329 |
| Cut Bank Stabilization (742) (ac) | 1,765 | 1,600 |
| Dam (402) (no) | 22 | 1 |
| Dam, Diversion (348) (no) | 27 | 6 |
| Deep Tillage (324) (ac) | 34,329 | 9,245 |
| **Dike (356) (ft)** | **579,392** | **127,900** |
| Diversion (362) (ft) | 1,525,510 | 284,335 |
| Drainage Water Management (554) (ac) | 2,082 | 626 |
| Dry Hydrant (432) (no) | 12 | 4 |
| **Early Successional Habitat Development/Management (647) (ac)** | **2,746** | **173** |
| **Fence (382) (ft)** | **72,801,299** | **16,594,527** |
| **Field Border (386) (ft)** | **5,585,776** | **1,328,318** |
| Filter Strip (393) (ac) | 10,826 | 3,489 |
| Firebreak (394) (ft) | 3,026,943 | 677,488 |
| **Fish Passage (396) (no)** | **5** | **1** |
| **Fishpond Management (399) (no)** | **46** | **34** |
| Forage Harvest Management (511) (ac) | 115,839 | 54,294 |
| Forest Site Preparation (490) (ac) | 33,475 | 8,287 |
| **Forest Stand Improvement (666) (ac)** | **68,755** | **30,517** |
| Forest Trails and Landings (655) (ac) | 4,653 | 5,900 |
| Grade Stabilization Structure (410) (no) | 24,613 | 3,260 |
| Grade Stabilization Structure-Tire Bales (790) (no) | 1 | |
| **Grassed Waterway (412) (ac)** | **104,315** | **8,893** |
| Grazing Land Mechanical Treatment (548) (ac) | 49,538 | 8,803 |
| Heavy Use Area Protection (561) (ac) | 722,887 | 33,025 |

| Conservation Practice (NRCS practice code) (units reported) | Planned | Applied |
|---|---|---|
| **Hedgerow Planting (422) (ft)** | **204,001** | **555,997** |
| Herbaceous Wind Barriers (603) (ft) | 3,810,530 | |
| Hillside Ditch (423) (ft) | 216,445 | 51,405 |
| Improved Water Application (743) (ac) | 381 | 128 |
| Incinerator (769) (no) | 129 | 52 |
| Infiltration Ditches (753) (ft) | 1,172 | 300 |
| Irrigation Canal or Lateral (320) (ft) | 2,781 | 9,350 |
| Irrigation Field Ditch (388) (ft) | 154,379 | 23,281 |
| Irrigation Land Leveling (464) (ac) | 126,476 | 126,807 |
| Irrigation or Regulating Reservoir (552) (no) | 205 | 25 |
| Irrigation Storage Reservoir (436) (ac-ft) | 31,735 | 442 |
| Irrigation System, Microirrigation (441) (no) | 19,773 | 2,841 |
| Irrigation System, Sprinkler (442) (no) | 220,564 | 26,722 |
| Irrigation System, Surface and Subsurface (443) (no) | 16,025 | 2,450 |
| Irrigation System, Tailwater Recovery (447) (no) | 1,686 | 49 |
| Irrigation Water Conveyance, Corrugated, Ribbed or Profile wall thermal pipeline (794) (ft) | 11,913 | 10,638 |
| Irrigation Water Conveyance, Ditch and Canal Lining, Flexible Membrane (428B) (ft) | 82,241 | 23,232 |
| Irrigation Water Conveyance, Ditch and Canal Lining, Galvanized Steel (428C) (ft) | 110 | |
| Irrigation Water Conveyance, Ditch and Canal Lining, Nonreinforced Concrete (428A) (ft) | 1,053,267 | 282,122 |
| Irrigation Water Conveyance, Pipeline, Aluminum Tubing (430AA) (ft) | 17,384 | 5,455 |
| Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic (430DD) (ft) | 7,251,859 | 3,682,862 |
| Irrigation Water Conveyance, Pipeline, Low-Pressure, Underground, Plastic (430EE) (ft) | 3,624,958 | 1,198,368 |
| Irrigation Water Conveyance, Pipeline, Nonreinforced Concrete (430CC) (ft) | 10,540 | |
| Irrigation Water Conveyance, Pipeline, Reinforced Plastic Mortar (430GG) (ft) | 1,100 | |
| Irrigation Water Conveyance, Pipeline, Rigid Gated Pipeline (430HH) (ft) | 1,827,532 | 464,555 |
| Irrigation Water Conveyance, Pipeline, Steel (430FF) (ft) | 14,286 | 6,682 |
| Irrigation Water Management (449) (ac) | 799,351 | 267,158 |
| Land Clearing (460) (ac) | 504 | 55 |
| Land Grading (744) (ac) | 693 | 82 |
| Land Smoothing (466) (ac) | 6,765 | 1,251 |
| Lined Waterway or Outlet (468) (ft) | 49,910 | 6,244 |
| Livestock Shade Structure (717) (no) | 3 | 1 |
| Livestock Use Area Protection (757) (ac) | 761,887 | 38,523 |
| Long Term No. Till (778) (no) | 12,937 | 4,831 |

| Conservation Practice (NRCS practice code) (units reported) | Planned | Applied |
|---|---|---|
| Manure Transfer (634) (no) | 101,184 | 2,947 |
| Milking Center Wastewater Treatment System (719) (no) | 329 | 6 |
| Mulching (484) (ac) | 34,689 | 243 |
| Nutrient Management (590) (ac) | 3,889,489 | 1,195,881 |
| Obstruction Removal (500) (ac) | 7,646 | 101 |
| Open Channel (582) (ft) | 23,690 | 7,124 |
| Pasture and Hay Planting (512) (ac) | 508,013 | 149,050 |
| Pathogen Management (783) (ac) | 2,209 | |
| Pest Management (595) (ac) | 2,636,632 | 850,914 |
| Pipeline (516) (ft) | 35,849,891 | 11,032,141 |
| Planned Grazing System (762) (ac) | 36,569 | 50,440 |
| **Pond (378) (no)** | **35,774** | **26,784** |
| Pond Sealing or Lining, Bentonite Sealant (521C) (no) | 200,108 | 6 |
| Pond Sealing or Lining, Flexible Membrane (521A) (no) | 78,336 | 12,244 |
| Pond Sealing or Lining, Soil Dispersant (521B) (no) | 75 | 3 |
| Precision Land Forming (462) (ac) | 3,209 | 711 |
| **Prescribed Burning (338) (ac)** | **200,806** | **43,461** |
| **Prescribed Grazing (528) (ac)** | **1,404,366** | **904,679** |
| **Prescribed Grazing (528A) (ac)** | **7,624,246** | **4,768,032** |
| Pumping Plant (533) (no) | 7,531 | 679 |
| Range Planting (550) (ac) | 217,448 | 48,407 |
| Rangeland Fertilization (721) (ac) | 447 | |
| Record Keeping (748) (no) | 35,174 | 31,165 |
| Recreation Land Grading and Shaping (566) (ac) | 1 | |
| Recreation Trail and Walkway (568) (ft) | 8,501 | |
| **Residue Management -Direct Seed (777) (ac)** | **133,015** | **24,700** |
| **Residue Management, Mulch Till (329B) (ac)** | **846,668** | **285,649** |
| **Residue Management, No-Till/Strip Till (329A) (ac)** | **1,516,465** | **474,288** |
| **Residue Management, Ridge Till (329C) (ac)** | **32,290** | **9,383** |
| **Residue Management, Seasonal (344) (ac)** | **282,690** | **237,439** |
| **Restoration and Management of Declining Habitats (643) (ac)** | **3,270** | **107** |
| Rice Water Control (746) (ac) | 87 | |
| Rinsate Management (764) ($ft^3$) | 1 | 1 |
| **Riparian Buffers - Vegetative (759) (ac)** | **15** | **1** |
| **Riparian Forest Buffer (391) (ac)** | **7,178** | **2,413** |

| Conservation Practice (NRCS practice code) (units reported) | Planned | Applied |
|---|---|---|
| Riparian Herbaceous Cover (390) (ac) | 804 | 79 |
| Road/Landing Removal (722) (ac) | | 2 |
| Rock Barrier (555) (ft) | 830 | 330 |
| Roof Runoff Structure (558) (no) | 22,999 | 3,276 |
| Row Arrangement (557) (ac) | 744 | 682 |
| Runoff Management System (570) (ac) | 15 | 7 |
| Sediment Basin (350) (no) | 13,009 | 64 |
| **Shallow Water Management for Wildlife (646) (ac)** | **6,549** | **1,381** |
| Silage Leachate Collection and Transfer (765) ($ft^3$) | 12 | |
| Silvopasture Establishment (791) (ac) | 67 | |
| Sinkhole and Sinkhole Area Treatment (725) (no) | 10 | 9 |
| Soil Salinity Control (738) (ac) | 26,036 | 6,181 |
| Soil Salinity Management-Nonirrigated (571) (ac) | 13,385 | 5,581 |
| Spoil Spreading (572) (ft) | 24,649 | 1 |
| Spring Development (574) (no) | 2,410 | 1,077 |
| Stream Crossing (728) (no) | 23,161 | 104 |
| **Stream Habitat Improvement and Management (395) (ac)** | **8,119** | **2,320** |
| Streambank and Shoreline Protection (580) (ft) | 615,617 | 160,772 |
| Stripcropping (585) (ac) | 6,860 | 1,553 |
| Stripcropping, Field (586) (ac) | 3,472 | 208 |
| **Structure for Water Control (587) (no)** | **41,082** | **7,561** |
| Subsurface Drain (606) (ft) | 2,946,072 | 463,054 |
| Surface Drainage, Field Ditch (607) (ft) | 322,420 | 1,200 |
| Surface Drainage, Main or Lateral (608) (ft) | 52,737 | 3,500 |
| Surface Roughening (609) (ac) | 8,493 | 14,786 |
| Surface Wetting (760) (ac) | 11 | 1 |
| Temporary Steel Windbreak (771) (no) | 13,038 | 3 |
| Terrace (600) (ft) | 25,025,835 | 6,020,058 |
| Toxic Salt Reduction (610) (ac) | 17,775 | 11,356 |
| Transition to Organic Production (789) (ac) | 6,884 | 1,920 |
| **Tree/Shrub Establishment (612) (ac)** | **47,637** | **13,589** |
| Tree/Shrub Pruning (660) (ac) | 51,708 | 383 |
| Underground Outlet (620) (ft) | 3,394,228 | 757,821 |
| **Upland Wildlife Habitat Management (645) (ac)** | **973,119** | **1,345,495** |
| Use Exclusion (472) (ac) | 160,595 | 25,629 |

| Conservation Practice (NRCS practice code) (units reported) | Planned | Applied |
|---|---|---|
| Vegetative Barrier (601) (ft) | 10,500 | 4,600 |
| Vertical Drain (630) (no) | 294 | 39 |
| Waste Facility Cover (367) (no) | 12,667 | |
| Waste Field Storage Area (749) (no) | 16 | 6 |
| Waste Storage Facility (313) (no) | 235,909 | 79,604 |
| Waste Treatment Lagoon (359) (no) | 108 | 32 |
| Waste Utilization (633) (ac) | 563,208 | 112,981 |
| Waste Water & Feedlot Runoff Control (784) (ac) | 161,617 | 910 |
| Waste Water Irrigation (732) (ac) | 20 | 18 |
| Wastewater Treatment Strip (635) (ac) | 31,394 | 1 |
| Water and Sediment Control Basin (638) (no) | 108,976 | 8,964 |
| Water Harvesting Catchment (636) (no) | 5 | 2 |
| Water Well (642) (no) | 18,831 | 1,595 |
| Watering Facility (614) (no) | 241,572 | 21,583 |
| Waterspreading (640) (ac) | 398 | 171 |
| Well Decommissioning (351) (no) | 2,066 | 1,542 |
| Well Plugging (755) (no) | 2 | 1 |
| Well Testing (731) (no) | 17 | 80 |
| **Wetland Creation (658) (ac)** | **205** | **101** |
| **Wetland Enhancement (659) (ac)** | **827** | **167** |
| **Wetland Restoration (657) (ac)** | **1,088** | **9,582** |
| **Wetland Wildlife Habitat Management (644) (ac)** | **15,100** | **26,097** |
| **Wildlife Watering Facility (648) (no)** | **191** | **35** |
| **Windbreak/Shelterbelt Establishment (380) (ft)** | **4,934,765** | **1,753,327** |
| **Windbreak/Shelterbelt Renovation (650) (ft)** | **969,648** | **204,164** |