
Chapter IV

Findings and Discussion

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The preceding section illustrates some examples where agriculture production and wildlife conservation can be mutually reinforcing, if appropriate production technologies are developed and used. Certain new, innovative technologies exist that can help maintain habitat and improve long-term farm profits. The use of some of these technologies—e. g., conservation tillage—is increasing.

However, some farmers and ranchers perceive that many sites exist which simply can-

not sustain simultaneously profitable agricultural use and wildlife habitat integrity with those technologies now available. Hence, the need exists for technology innovation and for accelerating the development and use of these technologies. Expanded research, education, and implementation programs could greatly improve the ability to integrate agriculture and wildlife interests, particularly on croplands.

OPPORTUNITIES AND CONSTRAINTS TO TECHNOLOGY DEVELOPMENT AND USE

Research

Research is the basis of technology development. Research provides the information to increase our understanding of the structure and functioning of ecosystems, to solve particular problems or design resource-use systems, and to evaluate and refine these systems. Although research is a continuous process, the OTA study identified three areas that could benefit from research in the effort to integrate agriculture and wildlife.

The major constraint to the development and use of technologies that could benefit both agriculture and wildlife is the dearth of information on agriculture and wildlife trade-offs involved with each of these technologies. For instance, riparian zones or streamside management zones have been identified as having important benefits on-farm and off-farm for stream water quality, pollution control, wildlife habitat, and maintenance of the land's natural productivity. Yet little data exist that quantify the benefits or costs to the landowner of maintaining riparian zones. Because the capabilities of streamside zones and the trade-offs between maintaining these areas versus pro-

ducing crops, livestock, or timber on this land are not well documented, private landowners have little incentive to adopt this technique. Thus, new economic models and production models are needed that incorporate societal benefits and costs from nonmarket goods (e.g., wildlife habitat) to evaluate trade-offs in various land management technologies.

Another area of great uncertainty and one that could become a major constraint to adopting emerging land management systems is the *lack of basic data on the problems and perceived risks to farmers during the transition from conventional farming to conservation tillage or biological farming*. Economic and agro-economic models have indicated potential economic loss (e. g., temporary reduction in crop yields) or other problems, but these models have not been field tested. Research is needed to identify the risks and opportunities associated with land management practices and the corresponding benefits for the landowner, wildlife, and society.

Research also is needed to *identify individual farm tools that can maintain wildlife habitat and yet meet the farmer's needs*. The under-

cutter plow is one example of such a farm tool that has dual benefits. However, little if anything is known about the potential for modifying other tools to meet these dual objectives. Although much of the development of farm tools takes place in private industry little incentive exists in private farm implement companies to invest in research that would benefit wildlife. Hence, the public sector will have to carry the responsibility for identifying agricultural tools or techniques that can help increase wildlife, a public good on private lands. Ways to reduce mortality of ground nesting wildlife species caused by haying equipment is an example.

Education

Developing and applying technologies that benefit both agriculture and wildlife requires knowledge of several disciplines. Progress in this area is severely constrained by the lack of interdisciplinary and coordinated research. A shortage of people trained in or with understanding of integrated land management systems further constrains the use of existing technologies,

Universities and research institutions are the focus for research and training of resource management professionals. At present, professional organizations concerned with accreditation and the Civil Service tend to promote curricula that are narrow in focus and restrict the opportunity for an integrated approach to education. Thus, *a shift in curricula is needed at universities to train resource management professionals who can understand integrated management systems and who can work across discipline boundaries*. Such a shift will take time because only a few educators seem to perceive the need and market demands do not reflect this need for integrated resource management.

The institutional arrangement to train broad-based resource professionals and to conduct interdisciplinary research already exists in the form of Land Grant University system. Land Grant schools contain a wide array of disciplines providing an opportunity for students

to obtain some knowledge of various disciplines. In addition, Land Grant schools generally are associated with the State Agriculture Experiment Stations—an opportunity to conduct interdisciplinary research and field test the results. Land Grant schools, however, may need encouragement, including incentives, to consider integrated management objectives in research and to broaden their public education function.

Implementation

Future implementation of land management technologies to benefit agriculture and wildlife depends to a large degree on the education and information available to the private landowner. Established tools that provide information to landowners include: 1) demonstrations, 2) one-on-one technical assistance, 3) media and publications, 4) pilot projects, and 5) in-service training. Establishing an information network using local opinion leaders also has excellent potential to bring information to private landowners.

A promising tool to transfer information to the landowner is the computer and computer software being developed presently by Land Grant schools, private industry, and innovative farmers to aid in on-farm decisionmaking and management. The potential exists to incorporate wildlife management techniques or agriculture/wildlife integrated techniques into such software for farmers' use. However, the information and data provided must be timely and sensitive to site differences.

Institutional structures to provide technical and educational assistance to landowners exist in many cases through Extension personnel, SCS, and other Federal or State agency representatives in the field. Extension has been very effective in educating farmers as to the personal and social benefits of clean-farming management. However, the shift to more resource-oriented farming while minimizing inputs will require changes in Extension so that new or different approaches are advocated. These changes would need to go beyond the current efforts to assist landowners through

education programs in fish and wildlife management techniques.

County administrators of ASCS programs, county and State Agricultural Stabilization and Conservation (ASC) Committees, and local soil and water conservation district representatives also could serve as information transfer points if they were provided direction and if landowners perceive a need for resource-oriented

information. The local county and district networks seem to be responsive to local pressure; pressure that is not necessarily conservation oriented in approach. Strong Federal direction to these local representatives of Federal and State government will be necessary to ensure the conservation intent of Federal programs is carried out.

ISSUES IN AGRICULTURE AND WILDLIFE INTEGRATION

Certain fundamental issues in the Nation's farm policy need to be addressed before proper application of appropriate interdisciplinary techniques to benefit agricultural and wildlife productivity will occur. One *such fundamental issue is the perception that agricultural production and wildlife habitat conservation are mutually exclusive land uses*. Landowners are unwilling to adopt mutually beneficial techniques if they are led to believe that wildlife cannot coexist with agricultural operations on the same land base. Agricultural practices of the last 25 years helped create this perception. Federal agencies responsible for resource management also perpetuate this perception. Much of the "wildlife" research from the ARS has focused on reducing "pest wildlife" populations on agricultural lands. Similarly, natural resource agencies have spent much of their budget on habitat preservation for wildlife and fish, thereby precluding agricultural production.

Furthermore, existing Federal programs which provide incentives for landowners to manage for wildlife in conjunction with their agricultural operations largely appear to have been ineffective. Other Federal programs designed to affect crop production and support farm incomes have had mixed effects on resource conservation. While most such programs do affect the natural resource base, they generally have not been designed to provide collateral conservation benefits.

One such Federal program which missed the opportunity to provide collateral wildlife ben-

efits was the Payment-In-Kind (PIK) commodity adjustment program of 1983. Under the PIK program, 80.6 million acres were taken out of production, but only about 20 percent of these PIK acres were considered to be good to excellent wildlife nesting cover in the Midwest (Berner, 1984). In addition, the law required farmers to mow fields planted to cover crops before the end of the nesting season to ensure the lands do not produce a commodity, but this practice destroyed bird nests on the set-aside acres,

No Federal resource agency (with the exception of the Forest Service and the Bureau of Land Management) has taken the responsibility for or been mandated by Congress to manage the entire resource base. For example, although SCS's stated mission is to conserve the resource base, the National Conservation Program limits SCS assistance to landowners to "high priority" concerns, of which wildlife is not one. The majority of USDA personnel believe wildlife is not a priority or a concern and tend to look to the Fish and Wildlife Service (FWS) for direction on agriculture and wildlife interactions. Similarly, the FWS has been slow to develop a role in agriculture policy and programs because "FWS are not farmers," despite their responsibility for a wide range of habitat issues. As a consequence, more opportunities exist for interagency and interdisciplinary coordination than are being acted upon.

Another fundamental issue is the trade-off in agriculture practices between short-term

profits from the land and the land's long-term productivity. Federal programs designed to stimulate production or control commodity prices tend to be short-term in nature and preclude the establishment of long-term conservation strategies,

For example, cash flows through federally sponsored loans and payments emphasize the short-term return on investment instead of long-term resource productivity. Federal investment credits and other tax measures may encourage conversion of fragile lands to cropland to maximize yields, without concern for all aspects of the natural resource base, including wildlife,

Similarly, price supports and loans appear to reward row-crop production at the expense of soil stability, water quality, and wildlife habitat. Conservation programs seem to reward those landowners who use resource damaging agricultural practices. For example, the Agricultural Conservation Program administered by ASCS provides cost-share payments for soil conservation practices but offers no compensation to those people already applying sound resource conservation practices on their lands.

Thus, to maintain wildlife habitat and agricultural productivity effectively on the Nation's land base, Federal agencies responsible for agricultural land management need to shift their emphasis from a solely production ethic to a land, water, and wildlife conservation ethic. This is not a new concept, and the authority to adopt resource-oriented management currently is available to USDA agencies. Even though wildlife considerations are incorporated into the stated goals of USDA agencies (USDA Policy on Fish and Wildlife, 1982), it appears that wildlife habitat management and natural resource conservation is a low priority in these agricultural agencies (Berg, 1984).

However, some progress is being made by the agencies to evaluate the on-farm environmental consequences of different agricultural programs (USDA, ASCS, 1984; Mironowski, 1984) like the commodity adjustment programs. In the next few years, new information may promote acceptance within USDA of the fea-

sibility of altering the administration of commodity programs to incorporate soil erosion prevention, water quality maintenance, and wildlife considerations more effectively than achieved currently.

Another issue that warrants discussion is the lack of incentive for Federal and other agencies to work together on management options that could benefit both agriculture and wildlife. Two approaches to solving this problem are interagency coordination through: 1) cooperative research, and 2) the establishment of a liaison who could help bridge information and cooperation gaps between agencies.

Interagency coordination, especially on research and demonstration projects, could pool limited human and financial resources and avoid duplication of effort. An example of the potential benefits of interagency coordination is the research and demonstration being conducted on warm-season grasses (or native prairie grasses). A number of State conservation agencies individually have evaluated the benefits of warm-season grasses for wildlife cover and food over the past decade. The State of Missouri, for instance, spent funds to determine beneficial aspects of warm-season grasses for wildlife and is now conducting separate experiments to evaluate livestock benefits (Evans, 1984b). It would seem more cost effective for both agriculture and wildlife interests to combine such research projects.

To bridge the gap between Federal and State agencies and wildlife conservation and agriculture agencies, the Missouri Department of Natural Resources created an Agricultural Liaison position. The Agricultural Liaison helps coordinate activities and information among the USDA, State agriculture agencies, and the Department of Natural Resources. The intended goals of this position are: 1) to encourage awareness of the positive and negative impacts of existing State and Federal agricultural programs on natural resources, 2) to encourage research and development of total farming systems which have wildlife benefits, and 3) to promote the flow of information on

common goals between the agriculture community and the Department of Natural Resources.

In addition, the FWS recently hired an Agricultural Specialist to coordinate agency activities and serve as a "point person" between the

FWS and USDA. These examples of existing and potential interagency coordination could greatly improve abilities to manage the agricultural land base for both agriculture and wildlife interests.

AREAS FOR POSSIBLE CONGRESSIONAL ACTION

The uses of agricultural land are influenced by technologies, institutions, public policies, and economic trends. Constraints to and opportunities for technology development and adoption are dictated, in part, by the institutions. Institutions provide the research, training, and implementation alternatives for managing the resource base. Public policies direct institutions in the coordination and implementation of technology adoption that, in turn, affects uses of the resource base,

Through the course of the OTA study, workshop participants and other experts provided policy suggestions for integrating agriculture and wildlife conservation concerns. These policy changes are designed to correct some of the fundamental constraints and to provide opportunities for improved agriculture/wildlife interaction. Public policies need to recognize that agriculture and wildlife can be mutually beneficial as well as mutually exclusive, depending on the situation (Leitch and Nelson, 1984).

Congress has two main channels to affect the development and use of technologies to benefit agriculture and wildlife: 1) through legislation, that either establishes new programs and policies or changes existing ones, and 2) through committee oversight on administration of existing laws and programs. Since farm policies are dictated primarily by the omnibus Farm Bill [reauthorized every 4 years], a major part of the following discussion on congressional action to promote integration of agriculture and wildlife focuses on the Farm Bill. The next Farm Bill is scheduled for reauthorization in 1985.

Opportunities for congressional action are divided into three main policy categories: 1) integrating farm economic policies with resource conservation policies, 2) enhancing Federal capabilities to develop and implement innovative technologies, and 3) improving the effectiveness of existing Federal programs. Table 1 lists the potential courses of action for Congress under these three categories.

Integrating Farm Economic Policies With Resource Conservation Policies

Potential courses of action available for congressional consideration that could integrate agriculture economic objectives with resource conservation objectives follow:

- A. Proposes a clear statement of congressional policy with regard to an integrated resource management approach to U.S. agriculture.
- B. Offers examples of incentive or reward programs to increase wildlife and fish habitat on private lands.
- C. Outlines the potential of cross-compliance between commodity and conservation programs to improve wildlife and fish habitat and other resource conservation, and discusses two variations to the sod-buster approach.
- D. Discusses the potential wildlife and fish and other resource benefits of a long-term conservation reserve, and presents five variations of the conservation reserve.
- E. Details three changes needed in an annual set-aside program if wildlife and fish

**Table 1. Potential Courses of Action for Congress With Variations Proposed to Improve
Wildlife and Fish Habitat Benefits**

Main policy category Potential course of action Variation	Refer to page	Main policy category Potential course of action Variation	Refer to page
i. integrating farm economic policy with resource conservation policies	30	5. Congress could encourage the development and protection of riparian vegetation buffer strips for conservation practices and inclusion of riparian borders in the conservation reserve acres, wherever appropriate . . .	36
A. A policy statement that stresses the importance of an integrated resource management approach to U.S. agriculture could be inserted in the preamble or introduction of each title of the Farm Bill.	31	E. Congress could direct USDA to establish enforceable regulations within the annual commodity adjustment program to improve erosion control and water quality benefits and optimize wildlife and fish habitat benefits	36
B. ASCS could be directed, under each commodity title, to implement an incentive program for use of conservation practices by landowners	31	1. Congress could require cover crop establishment and enforcement on all set-aside acres during the entirety of the time the program is in effect.	37
C. Legislation could be approved that promotes cross-compliance between Federal payments for commodity programs and conservation practices	32	2. Congress could prohibit mowing, grazing, surface tillage, or chemical control of cover crops until the end of the wildlife breeding season on idled lands	37
1. The "sodbuster" approach could apply to any new, highly erodible or ecologically fragile lands being converted from permanent cover to commodity production.	33	3. Congress could direct that lands be idled for one full calendar year for all commodities under the acreage adjustment program from the time the program is announced	37
2. Congress could deny Government subsidies for a minimum of 10 years to landowners who bring new lands into production and extend the prohibition of payments on conversion of erodible or fragile lands—even if the /and changes ownership	33	F. The General Accounting Office could be directed to evaluate the effect of tax policies on agricultural land conversion, wetlands, and other natural resources . .	38
D. Congress could authorize a multi-year conservation reserve program under each commodity title to replace the annual commodity adjustment programs currently authorized	34	ii. Enhancing Federal capabilities to develop and implement innovative technologies . . .	38
1. Congress could couple the conservation reserve program with the sodbuster approach to eliminate incentives for clearing new lands for production while taking other lands out of production.	34	A. Congress could direct USDA and USDI under Title XIV of the Farm Bill to cooperatively investigate and evaluate biological farming and other alternatives to conventional U.S. farming practices . .	38
2. Congress could prohibit mowing or grazing of grasses until the end of the ground-nesting wildlife breeding season	35	B. Congress could direct USDA, USDI, NM I%, and other appropriate Federal agencies to coordinate research and extension that have potential agronomic and wildlife and fish benefits	39
3. Congress could establish criteria for identifying areas of critical wildlife and fish habitat to be included in the conservation reserve	35	C. Congress could direct USDA and USDI to establish interagency regional councils devoted to agriculture and resource conservation integration in their respective research, extension, and land acquisition programs	39
4. Congress could add a clause to the conservation reserve eligibility regulations that allows acres devoted to conservation practices to be incorporated into the base acreage determination of conservation reserve eligibility.	35	D. Congress could conduct oversight on USDA administration to determine if conservation and agricultural objectives could be better served by a restructuring and/or realignment of USDA agencies . . .	40

Table 1. Potential Courses of Action for Congress With Variations Proposed to Improve Wildlife and Fish Habitat Benefits (Continued)

<i>Main policy category</i>		<i>Main policy category</i>	
Potential course of action	Refer to	Potential course of action	Refer to
<i>Variation</i>	<i>page</i>	<i>Variation</i>	<i>page</i>
///. /reproving the effectiveness of existing Federal programs.	40	Water Bank Program in fiscal year 1986 and beyond	42
A. Under the Conservation Programs Title of the Farm Bill, Congress could direct USDA to develop and administer an agricultural nonpoint source pollution program	40	D. Congress could direct USDA to implement NEPA regulations for environmental impact assessment and public comment on agricultural programs administered by USDA agencies	42
B. The Renewable Resources Extension Program could be funded at the full \$15 million authorization and directed to focus on interdisciplinary applied research and public education programs	41	E. Congress could conduct oversight on the small watershed program to determine if SCS is achieving goals of watershed stabilization through current methods or if the focus of projects should be redirected	42
c. Congress could significantly increase the fiscal year 1985 appropriation for the			

habitats are to be maintained on the retired acres.

- F. Proposes a General Accounting Office study to evaluate the impact of tax policies on land use changes, particularly the potential loss of wildlife habitat.

Many of the proposed courses of action discussed are not new and, in fact, were introduced and deliberated during the 98th Congress.¹ At the OTA workshop, participants suggested modifications to these legislative proposals to increase their potential resource conservation benefits, including benefits to wildlife and fish habitat. A brief analysis of suggested modifications, wherever applicable, follows the discussion of each course of action.

- A. A policy statement that stresses the importance of an integrated resource management approach to U.S. agriculture could be inserted in the preamble or introduction of each title of the Farm Bill.

A fundamental change needed in farm policy is congressional recognition of the importance of managing this Nation's resource base on a long-term, sustainable basis. A policy statement would signal the Federal agricultural and resource conservation agencies that wild-

life and fish habitat maintenance and restoration, soil conservation, and water quality enhancement will be an integral part of future agricultural policy.

A congressional policy statement alone, however, may not guarantee an improvement in the management of natural resources on agricultural lands. Further steps may be required.

- B. ASCS could be directed, under each commodity title, to implement an incentive program for use of conservation practices by landowners.

A reward and reimbursement program could help landowners overcome the economic trade-off between establishing conservation-oriented farming practices and full-scale production. An incentive program for wildlife habitat improvement on agricultural lands may be an effective way to increase wildlife and fish populations as well as meeting other resource conservation goals. Incentives could be offered in the form of higher direct (e. g., deficiency) payments or commodity price support loans; higher Agricultural Conservation Program cost-sharing levels for establishing or maintaining specific practices that improve wildlife habitat; or special low-interest or long-term loans for the purpose of establishing practices such as riparian zones that improve wildlife and fish habitat.

¹The discussion in this section is based on the assumption that farm economic programs will be similar to the programs in the 1981 Agriculture and Food Act.

Another example of a reward or "conservation bonus" program is the Shelterbelt Improvement Act introduced in the 98th Congress (S. 1138). This program was intended to reimburse landowners for the cost of preserving, restoring, improving, and establishing shelterbelts. It also called for reimbursing the landowner for a portion of the lost income resulting from land being taken out of crop production. A broader approach to rewarding landowners for using resource conservation practices could be an indirect subsidy for providing wildlife habitats on agricultural lands; e.g., a Wildlife Habitat Incentives Program (WHIP) patterned after the Forestry Incentives Program (FIP) which currently is administered by USDA and State forestry officials.

Incentives programs such as FIP may need to be evaluated for their ability to produce wildlife benefits prior to initiation of a new incentive program. In addition, an incentive or reward program would require new funds and manpower to carry out program objectives. Effective technical assistance and public education on potential benefits and shortcomings for landowner participation in incentive programs would be critical elements of program administration. Guidelines for defining the incentive recipients and determining limitations on Federal incentive payments would need to be developed.

C. Approve legislation that promotes cross-compliance between Federal payments for commodity programs and conservation practices.

The thrust of cross-compliance is to ensure that Federal funds are directed to those landowners using land management practices that sustain long-term land and water productivity. Cross-compliance policy could apply to all commodity program participants and could require soil, water, and wildlife and fish conservation practices on the landowner's entire property. A cross-compliance policy could be implemented at little or no cost to the Government, although more detailed analysis of this policy is necessary to determine actual implementation costs. Program administration costs

might be offset by savings in Federal expenditures on lands where conservation practices are not adopted. In addition, such action potentially might reduce the scope of current or future soil conservation and water quality programs, reducing the Federal revenues needed in these programs. Cross-compliance policy also appears to be acceptable to many landowners. A majority of landowners surveyed in the Midwest agreed that all farmers should be required to follow recommended soil conservation practices on their farms to qualify for farm price-support benefits (Guither, et al., 1984).

Cross-compliance may have limited effectiveness because only a small proportion of landowners are involved in the commodity programs (which receive Federal subsidies). In addition, a cross-compliance policy could reduce the number of farmers participating in the commodity programs, reducing the program's effectiveness in price control and resource conservation. Landowners may not participate in the programs because of the economic hardship of establishing conservation practices, potentially skewing the commodity program participation to only those landowners with established conservation practices and those capable of compliance with the conservation requirements. Overall, further analysis of a cross-compliance policy by USDA maybe necessary to determine the positive and negative impacts of the policy on resource conservation and agricultural commodity programs.

Cross-compliance could be administered as a penalty action. The penalty system would deny Federal funds to people engaging in agricultural activities that increase soil erosion, contribute to agricultural runoff and water pollution, or reduce wildlife habitat. A drawback of the penalty system is that it can create a bias against people who farm on easily erodible lands. For example, if the amount of Federal payments offered is based on the number of tons of soil lost from the land each year, landowners farming sloping land could receive less payments than landowners farming flat lands, even if the farmer on sloping land was applying conservation practices while his neighbor

on the flat area was not. A cross-compliance policy tied to the farmer's legitimate effort to conserve soil and not to actual soil losses would help overcome this bias. But, this approach may not have significant benefits for the resource base because the soil erosion rate may not be held below the acceptable tolerance value (T value)² and measuring legitimate effort will be difficult, if not impossible.

An example of cross-compliance is the "sodbuster" approach. Various forms of sodbuster legislation (H.R. 3457, H.R. 3906, S. 663) that would deny certain Federal payments for converting fragile, highly erodible lands to commodity production were introduced, debated, but not passed in the 98th Congress. Two variations of the sodbuster bills that might be incorporated under the commodity titles of the Farm Bill or presented as separate legislation follow:

1. Apply the sodbuster approach to highly erodible or ecologically fragile lands.
2. Extend the prohibition of Federal payments to landowners to at least 10 years.

Variation 1: The "sodbuster" approach could apply to any new, highly erodible or ecologically *fragile* lands being converted from permanent cover to commodity production.

Discussions of a sodbuster provision in the 98th Congress focused on highly erodible lands. However, other fragile lands exist that are threatened with land-use changes where natural vegetation is eliminated for commodity production. (Fragile lands are those slow to recover or revegetate after disruption of the topsoil and native vegetation.) Forested lands, such as bottomland hardwoods in the southern States, wetlands such as the prairie pot-holes, and other fragile habitats also provide important wildlife habitat and are being converted to crop production.

An expanded sodbuster provision could increase the habitat types, e.g., wetlands, on which Federal incentives for agricultural modification were reduced, thereby retaining a

greater diversity of habitat areas with unplowed vegetation for wildlife and fish. Under the National Resources Inventories (NRI), SCS has been identifying habitats not in cropland that are threatened with change from natural vegetation to crop production. The information from the NRI could be used by ASCS to determine which highly erodible areas have the greatest potential for conversion, thus, identifying where a sodbuster provision could be applied.

To locate ecologically fragile lands that could be included under a sodbuster provision, coordination with other resource inventories (e.g., the National Wetlands Inventory of FWS to identify wetlands) may be necessary. But, since the initial "sodbuster" proposal requires consultation between SCS and ASCS on identification of highly erodible lands where Federal subsidies could be denied, this variation is unlikely to create a significant increase in workload other than the expansion and updating of soil surveys by local ASC personnel.

Variation 2: Congress could deny Government subsidies for a minimum of 10 years to *landowners who bring new lands into production* and extend the prohibition of payments to landowners who convert erodible or fragile lands—even if land changes ownership.

Both soil and water conservation and wildlife benefits from a sodbuster provision would be greatest if the sodbuster provision was in effect over a period of several years. A 10-year prohibition against Federal payments could compliment the provision in the sodbuster bills in the 98th Congress that called for prohibition of Federal funding to land plowed in the previous 10 years, thereby creating a disincentive to plow erosion-prone soils for as long as 20 years.

A long-term prohibition against Federal payments for plowing previously unplowed lands could decrease the incentive to bring new lands into production because landowners would be faced with a loss of Federal dollars for a minimum of 10 years, instead of a season or two. The disincentive for land conversion to com-

²T value is considered the rough estimate of the yearly rate of "A" horizon formation on well-managed, medium-textured cropland soils. Values are established for each soil type by SCS.

modity crop production could be viewed as an incentive to retain native habitats for wildlife and fish. If the prohibition were applied to a particular piece of land regardless of a change of ownership, the incentive to create "cropland" by plowing erodible soils or fragile areas could be reduced. A multi-year program (e. g., 10 years) is likely to be easier to administer than a program of short duration and could reduce program overhead costs once the administration was organized.

D. Congress could authorize a multi-year conservation reserve program under each commodity title to replace the annual commodity adjustment programs currently authorized.

Current production adjustment programs tend to be yearly, limiting many farmers' ability to plan ahead in the kinds of crops to plant and creating a disincentive to implement conservation measures on land taken out of production (Jahn and Diehl, 1984; Berner, 1984). To solve this problem legislation was introduced in the 98th Congress to implement a long-term conservation reserve program (Title IV of H.R. 3457; Title IV of H.R. 3906).

The conservation reserve program is designed to take lands out of commodity production for multiple years (5 to 15 years) while reimbursing landowners in cash or "in kind" with stored commodity crops. Long-term projections on cropland diversion would be based on USDA projections of long-term commodity needs. The program could be designed to maximize soil conservation and water quality benefits as well as crop surplus control and price stabilization. Perennial cover crops or some form of vegetation cover used for soil conservation, water quality protection and, secondarily, to provide wildlife and fish habitat would be required for acres under the conservation reserve.

Requisite establishment *and maintenance* of perennial vegetation is essential if the program is to achieve any positive gains in soil conservation, water quality, and wildlife and fish habitat. For example, bare land could increase soil erosion in some situations and reduce the avail-

able nesting cover or food supply for wildlife. Thus, perennial cover crops that provide wildlife with food and nesting cover and are known to be efficient soil or streambank stabilizers (e.g., perennial grasses, willows) could be included in regulations regarding the conservation reserve.

A long-term conservation reserve could be an important provision in the 1985 Farm Bill for benefiting wildlife and fish. Five variations to the conservation reserve concept that might increase wildlife and fish habitat benefits on farms having reserved or idled lands were discussed by OTA workshop participants. The variations discussed below (not listed in priority order) range from inclusion of a "sodbuster" provision to prohibitions against cover crop disturbance.

1. Integrate a "sodbuster" proposal with the conservation reserve.
2. Prohibit disturbance of the cover crop on idled land during wildlife nesting season.
3. Establish criteria for identifying important wildlife habitat areas or types under the conservation reserve.
4. Allow acres devoted to conservation practices to be included in the determination of base acreage eligibility.
5. Develop and protect riparian areas under the conservation reserve.

Variation 1: Congress could couple conservation reserve programs with the "sodbuster" approach to eliminate incentives for clearing new lands for production while taking other lands out of production.

The conservation reserve alone would provide wildlife habitat for species that live and feed in areas where the vegetation growth cycles are disrupted occasionally. However, wildlife benefits from land taken out of production could be offset by the development of new or previously uncropped lands if Federal incentives to "plow-out" new lands remain.

A conservation reserve coupled with a "sodbuster" provision under each commodity title in the Farm Bill might help maintain wildlife habitats on the lands idled under the reserve

and on acres where conversion to cropland is not supported by Federal dollars. This assumes that the disincentive to the farmer of the “sodbuster” concept is sufficient to maintain an area in its natural state. A combination sodbuster provision-conservation reserve could: 1) maintain habitat diversity on erodible soils that have not been converted to commodity production, and 2) create habitat on previously cultivated areas, respectively, benefiting a wide array of wildlife species.

Variation 2: Congress could prohibit mowing or grazing of grasses until the end of the ground-nesting wildlife breeding season to protect nesting bird habitat and provide breeding areas for other wildlife species.

Wildlife benefits from a conservation reserve would be increased if restrictions were placed on mowing or grazing of cover crops during critical nesting periods. Mowing or grazing of cover crops on idled acres during the nesting season (approximately May 1 to August 1 for most areas of the country) will disrupt ground-nesting birds and other breeding wildlife species. It also will negatively affect the plants and topsoil where invertebrates live—an important food source for young wildlife species. The actual time of the restrictions could be determined by the State ASC Committees in *consultation with* the State fish and wildlife agencies,

For the farmer who hopes to gain some income from the cover crop by mowing or grazing the idled land, the delay in harvesting the cover crop could reduce his potential income. Cover crops like alfalfa, for example, have a nutrient content and digestibility peak during the early growing season. Alfalfa harvested past the quality peak will bring in a lower market price for the farmer than alfalfa harvested at the peak of forage quality. In some parts of the country, a farmer who delays mowing until August can ruin the alfalfa crop for the following spring.

Variation 3: Congress could establish criteria for identifying areas of critical wildlife and fish habitat to be included in the conservation reserve, secondary to the primary goals of price control and soil and water conser-

vation, using National Resources inventories data, and consultation with the U.S. Fish and Wildlife Service and the State fish and wildlife agencies.

wildlife and fish habitat areas identified as substantially threatened by agriculture could be protected through a conservation reserve. Identification criteria could be developed through consultation between USDA agencies with wildlife management expertise and the FWS. For example, the FWS has identified 34 counties in North Dakota having high potential for waterfowl production that now are not producing the full potential of migratory birds (Minnich, 1984). A lack of perennial vegetative cover that is undisturbed by agricultural practices during the nesting season is the primary reason these countries are not producing their full potential. Selecting areas like these countries to be idled under the conservation reserve could increase migratory bird and other wildlife production in North Dakota. Similarly, other areas of importance to wildlife and/or fish in an agriculture landscape could be identified using the available data bases of SCS, the FWS, NMFS, and the State fish and wildlife agencies,

However, the use of identifying criteria runs the risk of “robbing from Peter to pay Paul.” Lands having the most essential wildlife habitat may not be the same lands that have the highest soil erosion rates or lands where cropland retirement would be the most useful to meet the goals of the conservation reserve program.

Variation 4: Congress could add a clause to the conservation reserve eligibility regulations that allows acres devoted to conservation practices to be incorporated into base acreage determination of conservation reserve eligibility.

Current base acreage requirements for production adjustment program (of which the conservation reserve could be one) eligibility require that the acres included in the program be planted to a commodity crop during the previous 2 years. This requirement is perceived by soil conservationists and resource managers

as creating an incentive for farmers to plow and plant all their lands to commodities in order to increase their eligibility for the Federal payments under the program. The “plowing out” of new lands to establish base acreages usually means marginal lands are brought into production and previously unplowed wildlife habitat is destroyed, soil erosion is increased, and water quality is reduced. In addition, farmers who have established conservation practices are penalized under a conservation reserve program because their base acreage usually is smaller than their neighbor’s, on a farm of equal size, planted fencerow to fencerow without any adopted conservation measures.

A clause allowing acres with conservation practices (i.e., terraces, hedgerows, grassy waterways, riparian strips, wetlands) or soil-conserving crop rotations to be included in the base acreage could reduce the temptation for farmers to plow all of their lands for commodity production. But it would increase the acres eligible under the conservation reserve. The increase in land under retirement could increase the program’s cost.

However, a variable-payment scheme for the individual farmer who includes conservation acres in his base acreage would help reduce the increased cost associated with the increased acreage diverted under the conservation reserve. Such a scheme could offer lower annual payments for land that was not previously in commodity production in a way similar to how production adjustment program payments are determined based on what the land can produce.

Variation 5: Congress could encourage *the* development and protection of riparian vegetation buffer strips for conservation practices and inclusion of riparian borders in the conservation reserve acres, wherever appropriate.

Establishing and retaining riparian buffers along streams is a way to minimize water quality impacts from soil erosion and provide important wildlife and fish habitat needs. A congressional directive to USDA to include

streamside zones in the individual conservation reserve acres of the farmer could promote improvements in both local and downstream water quality. This directive would apply primarily to landowners who retired lands adjacent to stream corridors.

Cost-sharing and technical assistance for establishing and retaining riparian vegetation could be included with other cover-crop cost-sharing provided by ASCS and SCS. Wildlife, fish, and water quality benefits from streamside protection under a conservation reserve could be substantial. However, potential increases in program costs and workload may occur for the same reasons as those presented in Variation 4 above.

E. Congress could direct USDA to establish enforceable regulations within the annual commodity adjustment program to improve erosion control and water quality benefits and optimize wildlife and fish habitat benefits.

A long-term conservation reserve (Proposal D, p. 34) was the most preferred form of commodity adjustment program among OTA workshop participants to improve conservation benefits and control commodity production. However, annual programs currently authorized under each commodity title may continue and can be modified and improved to increase resource conservation benefits.

The following proposals to improve annual set-aside programs, if adopted as a package, could increase wildlife and other resource benefits. Any benefits gained under the annual program may be minimal compared to the resource conservation benefits achievable under a multi-year program.

1. Require cover crops on all set-aside acres prior to May 1 and maintain soil cover during the life of the program.
2. Prohibit surface disturbance of cover crops during the nesting season.
3. Idle lands based on land retirement needs for all commodities for one full calendar year.

Variation 1: Congress could require cover crop establishment and enforcement on all set-aside acres during the entire time the program is in effect.

Establishing and maintaining a cover crop (living plant material or residual plant matter) on idled lands could be a critical factor in the value of the program for wildlife habitat and other conservation goals (see Proposal D discussion). If the vegetative cover is established prior to May 1, breeding birds in particular could use the fields for nesting.

Enforcement of a cover crop requirement could be the responsibility primarily of State and local ASC and SCS personnel. Additional manpower may be necessary to ensure that the program regulations are followed. Cost-sharing also may be necessary to aid farmers in establishing a cover crop that will control erosion and provide wildlife habitat needs.

Variation 2: Congress could prohibit mowing, grazing, surface tillage, or chemical control of cover crops until the end of the wildlife breeding season on idled lands. The actual date would be determined by the State ASC Committee *in consultation with* the State fish and wildlife agency.

Establishing cover crops on idled lands has limited wildlife benefits unless a corresponding restriction is placed on disturbance of these acres during certain times of the year. Idled fields planted to a grass or legume, then mowed or plowed in mid-May to late-June, become ecological "death traps" for nesting birds caught in the blades of cutters or mowers. Large numbers of livestock released into fields where wildlife are feeding or nesting create disturbance and may eliminate the breeding success of a local wildlife population. Chemical weed control on an entire field may eliminate important wildlife nesting and escape cover, may be harmful to wildlife directly, and diminishes insect populations, thereby reducing wildlife food sources. Chemical weed control only on those small areas with identified "nuisance" plants, however, could reduce weed problems without adversely affecting wildlife habitat throughout the field.

Proponents for disturbing fields during the wildlife reproductive season do so because of a concern for weed control on idled areas. In addition, farmers who mow or graze idled fields can receive an income from land that otherwise is not producing, even though the land may be bringing in money under the commodity adjustment program. Delayed mowing of cover crops such as alfalfa could reduce the income available to the landowner (see discussion under Proposal D, #2). Thus, sufficient payments may be necessary to offset the potential loss of farmer income from these idled lands.

Variation 3: Congress could direct that lands be idled for *one full calendar year for all commodities* under acreage adjustment programs from the time the set-aside is announced, instead of the current system where land is retired only for a crop year.

At present, lands idled under the feed grain program can be planted to winter wheat, thereby increasing the stock of winter wheat and potentially creating a surplus of one commodity (winter wheat) while reducing surplus in another (feed grains). Moreover, potential wildlife benefits from the idled land are lost if the acreage is transferred from one form of intensive cultivation to another. If the set-aside covers *the entire calendar year for all commodities* that are in surplus or that come under the annual commodity adjustment programs, residue or cover crops would be available as wildlife habitat throughout the summer and winter months.

An annual adjustment program covering all commodities would require an improved level of advanced planning and coordination of commodity programs within USDA than currently is evident. The restriction on planting any commodity crop on set-aside lands may reduce the number of participants in the program if landowners perceive they could profit more without Federal payment. A reduction in program participation, while saving money, may weaken realization of commodity adjustment goals.

F. The General Accounting Office could be directed to evaluate the effect of tax policies on agricultural land conversion, wetlands, and other natural resources.

Concern exists that some current tax policies serve as an incentive for land speculation or for altering marginal lands from non-cropland to cropland. The result for wildlife could be a loss in native habitat and an increase in water pollution from the increased erosion caused by bringing marginal lands into production. Tax policies are an interwoven complexity. The relationship of tax policy specifically to land use or land-use changes has not been evaluated carefully. The General Accounting Office (GAO) is well suited to evaluate whether tax policies affect land use and the implications of that relationship.

Unfortunately, tax policies tend to have multiple effects. Each policy of the tax code may have impacts in local economies, local land-use patterns, land ownership patterns, as well as regional and national impacts. The direct relationship between tax policies and alteration of marginal or other lands from native vegetative cover to crop production is not clear. Thus, a report on the impact of tax policies on land use and wildlife habitat may require numerous assumptions that would dilute the accuracy of the analysis.

Enhancing Federal Capabilities to Develop and Implement Innovative Technologies

Technologies that benefit agriculture and other renewable natural resources exist, but their development and implementation to date have not received priority attention. Hence, Congress could act to accelerate the development and use of such technologies through Federal institutions.

This section presents potential courses of action for Congress to ensure that agencies address opportunities to integrate wildlife and fish conservation and agriculture. These proposed courses of action are:

- A. Research alternatives to conventional farming practices.
 - B. Increase development of interdisciplinary and interagency research and extension programs.
 - C. Develop interagency regional councils to coordinate agriculture and resource conservation.
 - D. Conduct confessional oversight hearings to determine if the USDA conservation program objectives could be improved by restructuring USDA.
- A. Congress could direct the U.S. Department of Agriculture and the U.S. Department of the Interior under Title XIV of the Farm Bill to cooperatively investigate and evaluate biological farming and other alternatives to conventional U.S. farming practices.

The needs in U.S. agriculture most often discussed by land resource professionals seem to be: 1) minimizing agricultural operation costs in labor and inputs, and 2) establishing farming practices that will maintain the long-term productive capabilities of the land and avoid degradation of water quality. For instance, private sector research on innovative technologies is beginning to shift to chemicals that require less capital cost and help minimize external resource impacts. This shift could have significant beneficial impacts on wildlife and fish habitats.

However, the USDA has not adopted a concerted research effort on alternatives to conventional, "clean" agriculture nationwide as yet. A congressional initiative in this area, similar to the direction provided on conservation tillage in the 1981 Agriculture and Food Act, could stimulate research into the benefits and costs to the landowner and the natural resource base from new and innovative alternatives to conventional farming (e.g., biological farming). Another congressional initiative could be the passing of the Agricultural Productivity Act of 1983 (S. 1128) which provides for onsite research and demonstration of alternative agricultural practices to reduce farming costs and establish the potential for other benefits to landowners and society.

This option may increase costs of the USDA research programs or, more likely, cause a redirection of available research dollars into a new program area, thus reducing funding levels on other research activities.

B. Congress could direct the U.S. Department of Agriculture, U.S. Department of the Interior, National Marine Fisheries Service, and other appropriate Federal agencies to coordinate research and extension that have potential agronomic and wildlife and fish benefits.

The Federal Government's role in developing interdisciplinary research and extension coordination between agriculture and other resource agencies (i.e., Federal and State fish and wildlife agencies) has not been extensive, although examples of federally initiated interagency and interdisciplinary coordination exist. Interagency coordination and policy guidance could strengthen the agriculture and wildlife knowledge of various Federal managing agencies as well as improve opportunities to develop techniques and programs to benefit both agriculture and wildlife.

Some vehicles for interagency coordination already exist. For example, some wildlife refuge managers (e. g., at De Soto National Wildlife Refuge, Missouri Valley, Iowa) are conducting informal research and demonstration of biological farming practices. This activity could be expanded to involve ARS and State Agriculture Experiment Station scientists as well as appropriate State agency personnel in the evaluation of different biological farming systems for enhancing wildlife and agricultural interests. Another opportunity is coordination of research and extension programs with the Extension Wildlife Specialists housed at the Land Grant Universities. These personnel, now in 31 States, could provide input and direction on activities and farming practices that would benefit both wildlife or fish and agriculture objectives.

To coordinate activities between departments and at different levels of government, creation of new positions or the shifting of existing staff might be necessary in some agen-

cies to develop a coordinating office or liaison staff person. Program costs for each of these options could be minimal and might amount to no more than two Full Time Equivalents (2 person-years) per agency involved; one for interagency liaison and one for internal coordination of activities.

C. Congress could direct USDA and USDI to establish interagency regional councils devoted to agriculture and resource conservation integration in their respective research, extension, and land acquisition programs.

Wildlife habitat preserves and easements could be coordinated with agricultural lands management to achieve the greatest gains for many different wildlife and fish species without a significant decrease in agricultural productivity (Harris, 1984). One approach to integrated systems management is the establishment of regional interagency councils to coordinate programs and policies for agriculture and wildlife and fish. The framework for these councils already exists in the form of regional Associations of State Fish and Wildlife Agencies and the regional Agriculture Councils comprised of USDA agency heads in each geographic area.

The concept of integrated land management through development of "landscape ecology theory" (Risser, Karr, and Forman, 1984) has sparked new attention among resource professionals and landowners concerned with various aspects of land resource use. Additional information would be necessary on ways to optimize benefits for all resource uses and users if regional management strategies were implemented using watersheds as the unit of management. A regional planning system has been fairly successful for water resource allocation (Interstate Water Compacts) but the concept has not been adopted for land and water management.

The greatest obstacle to a regional council approach to agency integration is the creation of a new level of bureaucracy to direct agency activities. Some agency representatives believe the existing multi-tiered bureaucracy of deci-

sionmaking and priority setting is unruly enough. In addition, regional councils would have to be given decisionmaking authority to be effective, which would require a redistribution of existing authority within the agencies involved in the regional effort.

D. Congress could conduct oversight on the U.S. Department of Agriculture administration to determine if conservation and agricultural objectives could be better served by a restructuring and/or realignment of USDA agencies.

Currently, USDA agencies involved directly or indirectly with resource conservation through research, extension, and program implementation are scattered throughout the Department under at least three different Assistant Secretaries. Such distribution of conservation programs throughout the Department may limit the ability to coordinate objectives and receive representation for conservation concerns from the Secretary of Agriculture. For example, the environmental programs in ASCS may have activities that are not represented adequately under an Assistant Secretary whose primary responsibility is International Affairs and Commodity Programs.

To integrate conservation and agriculture objectives, conservation and natural resource program administrations need to have the same representation and cohesion as other agricultural policy areas. Agencies with responsibility for conservation program administration and research could be united under one Assistant Secretary to develop cohesive conservation planning (Sallee, 1984). The Assistant Secretary would be responsible for coordinating agency objectives and programs and be able to represent conservation as a cohesive policy area to the Secretary of Agriculture.

However, the distribution of conservation programs throughout the Department also may allow access to all the programs and agencies that ultimately impact conservation, placing the conservation objectives closer to the sources of problems. In addition, the realignment of USDA conservation programs under one Assistant Secretary could lead to tem-

porary disruption of ongoing activities and create some confusion among agencies in the short term. Without an improved understanding of the impact of a realignment within USDA, it is difficult to determine if the costs to the agencies and specific personnel would be overcome by the gains in better conservation program representation.

Improving the Effectiveness of Existing Federal Programs

Some conservation programs and policies already exist. Some of them only need to be implemented and funded while others will need some modification to increase their effectiveness in improving agriculture and wildlife technology development and use.

The following potential courses of action highlight some major programs and policies where opportunities exist to strengthen agriculture and wildlife interactions. Proposals A through D will require increased funding levels for existing authorizations to create new or enhance existing capabilities in nonpoint source pollution abatement programs, Renewable Resources Extension programs, the Federal Water Bank program and implementation of the National Environmental Policy Act, respectively. Proposal E suggests that Congress use its oversight authority to evaluate the effectiveness of the SCS' Small Watershed program in meeting the desired objectives of watershed stabilization, erosion control, and water quality improvement.

Proposal A: Under the Conservation Programs Title of the Farm Bill, Congress could direct USDA to develop and administer an agricultural nonpoint source pollution **program**, using county conservation personnel and State water quality agency expertise to identify and administer Best Management Practices (BMPs) on agricultural lands consistent with the Environmental Protection Agency's Nonpoint Policy. In addition, cost-share payments, financial incentives, and cooperative agreements with farmers and operators may be necessary to implement these practices.

Section 208 of the Clean Water Act (Federal Water Pollution Control Act, as amended, Public Law 95-217) established a national program, administered by the U.S. Environmental Protection Agency (EPA), to assist State control of pollution generated by agricultural and urban runoff. Nonpoint pollution accounts for as much as 50 percent of all pollutants in the Nation's waters.

Agricultural runoff in the form of eroded soil by volume accounts for the greatest nonpoint source pollutant in the Midwest. Tied to soil particles are chemicals and toxic substances which adversely affect beneficial water uses and users, including wildlife and fish populations.

Agricultural runoff might best be controlled by implementation of BMPs specific to each area of the country and general enough to cover all agricultural resources, including water, soil, fish and wildlife (Evans, 1984a). Federal conservation programs should have resource objectives for all resources, not just soil erosion. Implementation of BMPs also could take into consideration any economic impacts on the farmer. ASCS and SCS have the expertise to identify BMPs based on soil type and agricultural operations.

USDA's influence on landowners through administration of farm programs makes it the logical choice to coordinate agricultural runoff control associated with different operations. The institutional framework within USDA and State agencies already exists to administer an agricultural nonpoint control program with Extension, SCS, ASCS, county and State ASC offices, and soil and water conservation districts. USDA already has the basic authorization for a nonpoint pollution program under the Rural Clean Water Program (Section 319 of the Clean Water Act), and under the Soil and Water Resources Conservation Act of 1977 (Public Law 95-192). The SCS' Rural Clean Water program and national erosion control program (authorized by Public Law 95-192) to date have not been funded, although an "experimental" Clean Water Program is under way by ASCS.

To ensure that water quality goals are addressed according to State and local need, State water quality agencies need to be included in program development and implementation. The lack of State involvement could lead to overlap or duplication of Federal and State effort and could alienate a potential ally in the efforts to control nonpoint pollution. Jurisdictional problems between USDA, State water quality agencies, and EPA would have to be solved. A nonpoint program within USDA would require a budget expenditure for the Department and a recognition of USDA's role in nonpoint source pollution abatement.

Proposal B: The **Renewable Resources Extension Program** could be funded at the full \$15 million authorization and directed to focus on interdisciplinary applied research and public education programs.

The Renewable Resources Extension Act (RREA, Public Law 95-306) authorizes \$15 million annually for 10 years to expand educational programs in five major resource areas: forestland management, rangeland management, fish and wildlife management, outdoor recreation, and environmental management and public policy. Since Resource Extension personnel are recognized as key educators and information disseminators on natural resources conservation within USDA, resource personnel in Extension at the Land Grant Universities could play a vital role in coordinating interdisciplinary agriculture and conservation research and education programs on integrated management systems.

The Extension Resources Program estimates it would need approximately \$46 million annually to carry out approved programs based on the State's assessment of funds needed. Recent authorizations have averaged around \$2 million annually for the RREA. If public education on resource conservation issues is deemed important, then an increase in annual appropriations to the RREA would be necessary. Any funding increases in Renewable Resources Extension would need to be allocated evenly among the five program areas above to

ensure funding increases for fish and wildlife management.

Proposal C: Congress could significantly increase fiscal year 1985 appropriations for the **Water Bank Program** in fiscal year 1986 and beyond.

The Federal Water Bank Program is one of the most effective programs to conserve wildlife habitat on private lands. The program has been successful among landowners because it offers adequate compensation for land not in production and allows flexibility to "buy out" of contracts. Unlike the FWS Wetland Easement Program, the Water Bank offers 10-year contracts instead of longer term contracts.

The Water Bank is administered in 10 States and has been adopted by landowners principally in the Dakotas and Minnesota where the affected land is vital to waterfowl production. Current contract applicants to the program far exceed the appropriations provided to extend contracts or enter into new ones. (Some estimates suggest only one-third of applicants receive funding.) Fiscal year 1985 appropriations for the Water Bank were approximately \$8.8 million. In order for this program to increase its effectiveness, increased appropriations will be required.

Proposal D: Congress could direct USDA to implement **National Environmental Policy Act** regulations for environmental impact assessment and public comment on agricultural programs administered by USDA agencies.

The National Environmental Policy Act of 1969 (Public Law 91-190) was enacted to ensure Federal accountability and public input on programs and policies which influence the human environment. USDA policies and programs have a significant impact on the human and natural environments but only limited assessments disclose the degree to which those impacts occur.

Currently, the Conservation and Environmental Program Evaluation Group of the ASCS

has undertaken the process of developing an Environmental Impact Statement (EIS) on their commodity adjustment programs or set-aside programs to fulfill agency regulations under NEPA. Concern exists that USDA does not or has not evaluated its other programs and policies adequately for their environmental impacts, particularly the impacts to fish and wildlife populations, as required by the NEPA guidelines.

One aspect of NEPA which seems to be underemphasized in the development and administration of USDA programs has been the public involvement criteria imposed by NEPA. programs and policies which influence private land resource use to the extent of USDA programs should be open to public scrutiny and comment. By evaluating programs with the environmental assessment and public review process outlined in the NEPA regulations, the agencies will be accessible to public comment and to alternative proposals that incorporate wildlife and fish habitat considerations into program administration.

Proposal E: Congress could conduct oversight on **Small Watershed Program** to determine if SCS is achieving goals of watershed stabilization through current methods or if the focus of projects should be redirected.

The Small Watershed Program is administered by SCS to develop comprehensive land-use and water resource management plans for flood control or watershed protection in watersheds that are smaller than 250,000 acres in size. The plans include structural works, land treatments through contractual conservation plans (RMS, see Section II), public recreation development, and agricultural, municipal and industrial water supply management. Small watershed projects have potential to bring together numerous landowners on comprehensive land and water planning.

SCS has been criticized for advocating structural improvements and channelization projects at the expense of wildlife and fisheries habitat. Nonstructural applications could serve the

same ends as structural projects at less cost but will require greater planning and coordination. With the incorporation of sound conservation principles for land and water use and wildlife

habitat, small watershed plans could serve as the framework for comprehensive regional land management.

CONCLUSION

This report finds that technologies are available to private landowners and land managers to maintain wildlife and fish habitat in conjunction with agricultural operations. A fundamental constraint to adoption of these technologies on a large scale is the lack of Federal commitment to assist in managing the Nation's private land resources for sustained private and public benefits. To incorporate wildlife and fish habitat effectively into agricultural land use, congressional policy will need to support a shift in farm programs towards a resource-conserving form of management. By sending a clear mandate that all Federal agencies shall integrate conservation and agriculture objectives in programs influencing agricultural land use, Congress can help perpetuate the produc-

tive capacity of the renewable resource base, meet the objectives for clean water, and ensure that viable populations of wildlife and fish will be maintained into the next century.

The potential courses of action contained in this OTA workshop proceeding reflect opportunities that are available to Congress to change the emphasis in the Nation's agricultural and natural resource programs. Opportunities to integrate agriculture and wildlife programs are not restricted to the 1985 Farm Bill formulation. Other legislative initiatives in the 99th Congress can serve as vehicles to blend the long-term agricultural and conservation policies together as well.