

Wildlife Management on Virginia Conservation Reserve Program Land: the Farmers' View

by

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(ABSTRACT)

A mail-survey questionnaire concerning wildlife management on Conservation Reserve Program (CRP) land was sent to one-half (n = 808) the enrollees in Virginia selected at random. Results from a 76% return indicated that 72% wanted to improve the wildlife habitat on their retired land. These respondents felt that wildlife habitat improvement was important because of its visual appeal (23%), hunting opportunities for enrollee (21%), and future values for descendents (18%). Respondents who did not want to improve wildlife habitat desired to avoid attracting hunters. Most respondents (62%) indicated they had not been informed about improving wildlife habitat on their CRP land, and one-third of them wished someone would do so. Agricultural Stabilization and Conservation Service (ASCS) and Soil Conservation Service (SCS) personnel were the primary source (63%) of wildlife habitat information for CRP participants. CRP land was planted primarily to pines (49%), fescue-clover (19%), and fescue (15%). Only 5% of the land was enrolled as a "permanent wildlife habitat" Less than 2% of the respondents indicated that they had planted woody shrubs. Mowing the entire CRP acreage was the primary means (43%) of weed control. Leasing of CRP land to hunters for cash income was uncommon (3%). When asked what amount of compensation would be required to implement a wildlife plan, if the costs of doing so were paid, 27% indicated they would require no payment. CRP participants are older, more likely female, and control more land than typical Virginia farmers. These results indicate a high interest in wildlife on private land and a need for better targeting of information and education efforts by USDA and state wildlife management agencies.

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Chapter 1: INTRODUCTION

Wildlife management on private lands will become more important in the future. Demand for more outdoor recreation and increased concern about natural resources has wildlife and agriculture agencies paying closer attention to private land management. Attitudinal studies of landowners are needed to investigate approaches to influence them to manage their land wisely. Studies focusing on landowners attitudes, behaviors, and information sources regarding wildlife are desired by resource agencies, as reflected in these comments:

Attitudinal studies of landowners may therefore hold the key to successful wildlife management on private lands, but data are lacking in this regard. (Ruff and Isaac 1987:483)

Perhaps the most prominent issue in this period of "conservation in transition" will be a shift from emphasizing natural resources themselves to the people who manage and use the resources. We know far more about the nature of natural resources and the theory of how to manage them than we are actually able to put into practice. More effort should be expended on methods of knowledge transfer and ways to persuade users of natural resources to do so wisely. (VanMeter 1988:210)

For many decades, our primary focus has been the acquisition of critical habitat and recreational lands. We've done well at it and are even nearing goals. It's time to recognize that even when we complete those goals, we will control only a relatively small percentage of land. To meet our broad resource management mandates, we must influence private land management even more than now. (Besadny 1988:59)

In the United States, there are 413 million acres of cropland (Office of Technology Assessment 1985). Between 1985 and 1989, over 28 million of these acres have been retired through the Conservation Reserve Program (CRP; Wildlife Management Institute 1989). Because CRP land is not to be cropped or grazed for a 10-year contract period, it represents a tremendous potential for the expansion of farm wildlife populations (Jahn 1988). This study examines how

farmers, enrolled in the CRP, are responding to this opportunity. A questionnaire mailed to the CRP participants in Virginia was the survey instrument used. Although farming may not be a large source of income for many CRP participants, they are all considered farmers in the context of this study, because all CRP land was cropland.

To help put this study in perspective, a brief background is presented on the problem this study addresses, evolution of agricultural supply-control policy, response of farm wildlife to land use changes, and the manner in which wildlife enhancement became an objective of the 1985 Farm Bill.

1.1 The Problem

This study concentrates on the farmers' view toward one of the specific objectives of the CRP, the creation of better habitat for wildlife through improved food and cover. Harmon and Nelson (1973) stated 5 generalities concerning farm wildlife. They were:

1. farm wildlife has many values;
2. farm wildlife is a by-product of agriculture;
3. habitat for farm wildlife is declining;
4. wildlife managers must accept constraints imposed by the economic objectives of farm owners or operators; and
5. land acquisition, cost-sharing for habitat development, information and education, and other state wildlife agency programs have not succeeded in maintaining farm game populations, nor are they likely to in the future.

The long-term retirement of highly erodible cropland through enrollment in the CRP has created a special circumstance that can; (a) cause the habitat for farm wildlife to increase, (b) remove some

of the economic constraints that keep farmers from managing wildlife, and (c) provide an avenue for successful wildlife agency programs on the nations farmlands.

The CRP is a federal agricultural program that can influence the management of a much greater number of acres and farmers than any state wildlife agency program to date. However, researchers have found that just over 9% of the total land in CRP has wildlife or forestry practices as its main objective (Isaacs and Howell 1988). That CRP participants were not creating and improving wildlife habitat on their CRP land near the potential that exists may be of concern to:

- The USDA, because Congress made wildlife habitat one of the stated objectives of CRP. USDA has the responsibility of trying to meet these objectives;
- Wildlife agencies and conservation organizations with vested interest in wildlife;
- Recreationists seeking quality outdoor experiences in pursuit of wildlife;
- CRP participants, because they may not be realizing the totality of benefits that CRP makes available; and
- The general public, because of their large willingness-to-pay for improved environmental quality of which wildlife habitat is one part.

The opportunity to enhance wildlife on farmland without placing a financial burden on the farmer was made available through the CRP. By exploring farmers' attitudes toward wildlife, information sources concerning wildlife enhancement, and present management of their CRP acres, an understanding of farmers behavior toward this opportunity may be gained. The objectives of this research were:

1. To determine farmers' attitudes toward improving the wildlife habitat on their CRP land in Virginia;
2. To determine information sources Virginia CRP participants use to discover and implement the wildlife options on their retired land;
3. To quantify the present management of Virginia CRP land focusing on wildlife habitat and recreational access; and

4. To determine the financial incentives Virginia farmers would require to incorporate a wildlife plan on their CRP land.

1.2 Agricultural Land Diversions: A Brief History

The depression that hit the farm economy in the 1920's was a harbinger of the chronic supply problem that would afflict U.S. agriculture. The surplus production attributable to technological advances after World War I depressed farm prices and farmers' incomes. Even though laborers were drifting away from the farm, production continued to increase as smaller farms were consolidated. Low commodity prices and farm income became a periodic problem in American agriculture.

The "farm problem" was first attacked with a government price support system under the authority of the Commodity Credit Corporation (CCC). Created during the Franklin Delano Roosevelt Administration in 1933, the CCC was given the responsibility of performing the financial and storage functions linked to commodity price and farm income support programs. The CCC had no operating personnel and was administered by the Agricultural Stabilization and Conservation Service (ASCS).

Price supports added to the overproduction problem because commodities continued to be produced over the quantity demanded. This growth in agricultural production was encouraged by government policies which were financed by public expenditures (Knutson et al. 1983). Production control programs were first authorized under the Agricultural Adjustment Act of 1933, but were declared unconstitutional in 1936. Reauthorized in 1938, price supports were set and marketing quotas were promulgated if 2/3 of the producers holding allotments approved the quota in a referendum vote (Knutson et al. 1983).

Overproduction was not of concern during World War II. In fact, price supports were increased as an incentive to produce. Production controls remained suspended until 1954 when depressed commodity prices and farm income caused agricultural policymakers to apply braking

mechanisms to overproduction. Price supports were reduced, but surpluses continued to grow. A consensus emerged that a pragmatic solution would be to retire large quantities of land from production (Knutson et al. 1983). A voluntary land retirement program based on acreage diversion was developed. This voluntary land retirement program was authorized under the Agriculture Act of 1956 and was referred to as the Soil Bank program.

The diverted land in the Soil Bank was hayland or cropland and had to be maintained in soil conserving use. The Soil Bank was divided between the Conservation Reserve and the Acreage Reserve. The Conservation Reserve was for multi-year (3, 5, and 10-year) retirement and diverted an average of 28.6 million acres annually (Isaacs and Howell 1988). The Acreage Reserve retired land on an annual basis. The total acreage retired by the Soil Bank swelled to 63 million in the mid-1960's. From 1961 to 1972 there was an average of 12% of the cropland in retirement, yet wheat production increased 25% and corn production increased 55% during this time period (Knutson et al. 1983). Farmers were known to retire their poorest acres, increase the inputs on their remaining cropland, and adopt new production technologies, thereby maintaining a wide gap between percent of acres retired and percent of commodity production reduced.

Smaller magnitude long-term diversions followed the expiration of the Soil Bank. They were the Cropland Conversion Program of 1962 and the Cropland Adjustment Program of 1965 which retired 0.6 million acres and 3.9 million acres, respectively (Harmon and Nelson 1973).

In the 1970's a production push ensued. Commodity prices were bolstered by a bullish export market attributable to world weather patterns and a weak U.S. dollar that resulted in increased demand for U.S. grains. Cropland conversion was rampant as grasslands and marginal farmland came under row-crop production. From 1972 to 1982, harvested cropland in the U.S. increased 56 million acres, a 17% expansion (Chapman 1987). The farm-sector prosperity was short-lived, and prices fell dramatically when weather patterns stabilized, the dollar strengthened, and Third World countries entered the marketplace. The conversion of land to cropland did not follow suit as farmers with a high debt/asset ratio pushed for more production to make their loan payments as commodity prices shrank. Many farmers went out of business and were bought out by more

owners of more efficient and typically larger operations. Government agriculture programs were capitalized into farmland values, the participating farmer had the advantage over the nonparticipant.

Production controls again became an important concept in U.S. agricultural policy. Land-based supply controls of the late 70's and early 80's included annual set-asides and acreage reductions (Acreage Conservation Reserve). These differed from land diversions because they were tied to eligibility for other farm programs and did not require direct government payments for land retirement. In 1983, an innovative program to reduce commodity production without direct cash payments to farmers was the Payment-In-Kind (PIK) program. PIK paid farmers in government-owned commodities such as corn or wheat. The 82 million acres of cropland idled by PIK and a similar program were projected to save about 3 tons of soil per acre. A USDA report released in 1984 estimated that only 1.6 tons of soil per acre were saved per year (Blanpied 1984).

A coalition of lobby groups with constituent interests other than traditional farm price and income problems influenced the direction of the latest farm bill, The Food Security Act of 1985. For the first time, conservation issues were linked with acreage retirement. Title XII, Section D of this Act is known as the Conservation Reserve Program (CRP). The CRP provided farmers a cash incentive to retire their highly erodible cropland for ten-year contract periods. The stated objectives of the CRP were:

1. reduce water and wind erosion,
2. protect our long-term capability to produce food and fiber,
3. reduce sedimentation,
4. improve water quality,
5. create better habitat for fish and wildlife through improved food and cover,
6. curb production of surplus commodities, and
7. provide needed income support for farmers.

CRP land must have vegetative cover planted to control erosion. Several cover practices can be implemented (Table 1) including permanent wildlife habitat, shallow water areas for wildlife and wildlife food plots. The cover must have a minimum life span of 5 years (U.S. Gov. Printing Office

1987). The Secretary of Agriculture must provide technical assistance to the CRP participant and a 50% cost-share to establish vegetative cover on the CRP land (Glaser 1986). The CRP participants must agree not to harvest, graze, or use the land for commercial gain. One exception is the leasing of access to CRP land for recreational purposes (U.S. Department of Agriculture 1985).

The goal of the USDA was to enroll 45 million acres in the CRP. By 1989, nearly 28 million acres have been diverted under this program. In Virginia, nearly 40,000 acres, representing 4% of the land eligible for CRP, are in the CRP (Wildlife Management Institute 1988).

1.3 Plight of Farm Wildlife

In general, intensive agricultural practices have caused the populations of farm wildlife to wane. Researchers in Illinois compared the wildlife numbers of 1939 with those of 1974 at one study site. The greater prairie chicken (*Tympanuchus cupido*) disappeared, while densities of bobwhite quail (*Colinus virginianus*) and cottontail rabbit (*Sylvilagus floridanus*) fell 78% and 96%, respectively (Vance 1976). Survival of pheasant (*Phasianus colchicus*) chicks to 5-6 weeks dropped from 78% in the early 1950's to 54% during 1975-81 and was correlated significantly with increased row-cropping (Warner et al. 1984). Wildlife census data from several Midwestern states from the early 60's to the late 70's also revealed a drastic decline in pheasant, rabbit, and quail numbers (Farris and Cole 1981). Six species of songbirds inhabiting Illinois grasslands were reduced to < 10% of their late 1950 abundance by 1983 (Graber and Graber 1983).

Farm equipment has made remarkable changes in the last 60 years. Live horse-power, in frequent use during the 1920's, gave way to the internal combustion of tractor-power. In the 1950's, the majority of farmers used small (30 horsepower) tractors for their fieldwork. Various types of livestock and crops were raised on each farm. Their farms could be characterized as diverse. Since then farming has become more specialized to produce commodities more efficiently. The adoption

Table 1. Conservation practices eligible in Conservation Reserve Program (Isaacs and Howell 1988).

ASCS CODE	TITLE AND DESCRIPTION
CP1	ESTABLISHMENT OF PERMANENT INTRODUCED GRASSES AND LEGUMES--Seeding mixtures of perennial, non-native (cool season) grasses and legumes (or forbs).
CP2	ESTABLISHMENT OF PERMANENT NATIVE GRASSES--Seeding perennial, prairie (warm season) grasses and optional legumes.
CP3	TREE PLANTING--Planting a stand of trees to provide multipurpose forest benefits.
CP4	PERMANENT WILDLIFE HABITAT--Seeding perennial grasses and legumes or forbs, and planting trees or shrubs.
CP5	FIELD WINDBREAK ESTABLISHMENT--Planting strips of trees or shrubs to reduce excessive wind erosion.
CP6	DIVERSION--Constructing a low ridge to divert surface water runoff.*
CP7	EROSION CONTROL STRUCTURE--Constructing various types of structures to repair or prevent soil erosion from concentrating surface water runoff.*
CP8	GRASS WATERWAY--Shaping and seeding a shallow drainageway to guide surface water runoff.*
CP9	SHALLOW WATER AREAS FOR WILDLIFE--Developing or restoring a shallow water area (wetland or watering facility).
CP10	VEGETATIVE COVER--GRASS ALREADY ESTABLISHED--Eligible land with adequate grass cover established before being enrolled.**
CP11	VEGETATIVE COVER--TREES ALREADY ESTABLISHED--Eligible land with an adequate stand of trees established before being enrolled.**
CP12	WILDLIFE FOOD PLOT--Allows the establishment of annual wildlife food plots.**
CP13	VEGETATIVE FILTER STRIPS--Seeding grasses and optional legumes or forbs in strips adjacent to streams, lakes, or wetlands. In some situations, a portion of the strip may be planted to trees or shrubs.

* These practices are constructed so that permanent vegetative cover can be established on adjacent areas of CRP land.

** These practices are not eligible for ASCS cost sharing.

of new technologies increased farm output, reduced the average cost of production and increased the optimum size of the farm (Knutson et al. 1983). By 1967, the average farm size was double that of 1940 (Burger 1978). The diversity of habitats that farm wildlife thrived on has dwindled.

Burger (1978:99) stated the plight of farm wildlife habitat in one paragraph:

The old-fashioned farm with its potholes and small wetlands is inimical to big equipment working big fields. Draining and filling are inherent in modern big farming. "Land forming" (leveling and filling surface irregularities with heavy equipment) is replacing contour plowing and strip cropping. With his current investment in equipment, fertilizer, herbicides, pesticides, and land, today's big farmer cannot afford the time to maneuver around natural obstacles or lose the crops such areas can produce. Hence the accelerated loss of hedgerows, odd areas, small wetlands, and woodlots - the last remaining habitat on many farms and the very sites on which wildlife agencies until recently could anticipate landowner cooperation in habitat management programs. At the same time, fall plowing on Midwestern corn and soybean acreage and elsewhere has greatly increased so that land and equipment can be more efficiently - that is, profitably - used. The result is the total loss of such wildlife cover and food as the stubble once provided, with an attendant increase in wind erosion and siltation of waterways and wetlands.

A number of concurrent factors reduced the pheasant population (Leedy 1987): (1) Changes in landuse practices created less favorable habitat by reducing nesting cover, brood rearing cover, and winter cover; (2) Insecticides and herbicides limited the availability of insects and weed seeds; (3) Fall plowing covered the waste grain that pheasants utilized.

The problem with farm wildlife is one of deciding whose responsibility it is. The quip that wildlife "is owned by both everybody and nobody (and as a result) everybody's business is nobody's business, and ... what belongs to everybody belongs to nobody and is, therefore, fair game for anybody" (Train 1978:276) applies to wildlife on the "back forty". Wildlife does not respect boundaries so there is not a complete set of market linkages between producer and consumer (Bishop 1981). Tomlinson (1985) stated that, with rare exceptions, landowners are not practicing wildlife management and will not do so until just compensation, trespass protection, or private ownership of wildlife are received. Private landowners cannot be expected to carry the burden of wildlife production without being appropriately compensated. This attitude is not recent and is prevalent in the literature:

...compensation to the landowner in some form or other is the only workable system for producing game on expensive private farmland. (Leopold 1930:33)

Largely ignored in the enthusiasm of the postwar years for restoring habitat was the fact that a commercial farmer, depending on his crops for his livelihood, is not apt to devote his time, equipment, or land to wildlife in return for anything less than the same cash income he derives from his crops, especially when the most obvious outcome will be free public game that will benefit others and compound his trespass problems. Viewed thus, the offer of 'free seed' or seedlings may be more insult than incentive. (Burger 1978:102)

We are expecting many people who can least afford it to provide and protect wildlife habitat, i.e. private landowners who depend on the land for their livelihood. Public policy has required that the private landowner be a philanthropist when it comes to wildlife habitat. (Svoboda 1981:390)

In a capitalist system in which rewards to the individual are supposedly geared to production, wildlife is the one commodity that is expected to be given to all society by one producing segment - the landowners. (Burger and Teer 1981:252)

Consumed in this debate, we have neglected to consult with the owner of the resource - the landowner. Without any basis, we have decided that each landowner has a latent sense of moral obligation to provide the public with free wildlife. And, when made aware of that fact, each landowner will enthusiastically forego income on the back 40. (Harmon 1981:377)

The basic conservation conflict in our society is that the 'highest and best use' of land as determined by the marketplace is seldom synonymous with the long-term needs of our society or nature's ecosystems. The price placed on land is set by those willing to use the land for immediate profit, even if it results in depletion of nonrenewable resources. While society offers a variety of incentives and encouragements for proper care of the land, the private landowner usually is expected to sacrifice to meet society's needs. The political and economic reality is that such efforts are often inadequate or ineffective. (Sand 1988:32)

Land use decisions are driven by economics, and efficient, "clean" tillage farming is not conducive to maintaining farm wildlife habitat (Committee on Impacts of Emerging Agricultural Trends on Fish and Wildlife Habitat 1982). Some agricultural policies have reduced wildlife habitat. Crop support programs and disaster payments take the risk out of farming marginal land while federal funding for drainage, clearing, and pasture improvement promote cropland expansion (Academy of Science 1982). These policies contradict supply control measures and inadvertently cause wildlife habitat on private lands to diminish.

1.4 Supply Control and Farm Wildlife

Agricultural policy techniques to curb the annual production of excess crops is termed supply control. One supply control technique of the late 1950's was a voluntary land retirement program known as the Soil Bank. An average of 12% of the cropland was in retirement from 1961 to 1972 (Knutson et al. 1983). The Soil Bank days caused a dramatic increase in farm wildlife populations. In the Midwest, pheasant populations were up to 100% higher with the Soil Bank and hunting

increased 250% in South Dakota, thereby contributing an estimated \$60 million per year to economic activities (Jahn 1988).

Long-term land retirement permitted farmers to maintain protective cover on diverted land at a lower cost than sporadic annual diversions or set-asides. The establishment of vegetative cover over a longer term provided public benefits by reducing erosion, increasing wildlife populations and providing a more attractive landscape (Harmon and Nelson 1973). Annual set-aside programs lacked these advantages, yet have become more commonplace since the long-term diversions have expired. Annual acreage set-asides averaged approximately 20% of the total cropland base from 1965 to 1985 (Evans 1985).

The PIK program of 1983 is a case in point. Millions of acres were retired for a growing season in exchange for government owned commodities. These acres were left unprotected, or with the previous year's stubble, thereby reducing soil erosion protection and wildlife habitat potential (Blanpied 1984). The lack of seeding and the mowing of cover crops including grass-oats-weed mixtures during the nesting season (Leedy 1987) limited the response of farm wildlife on PIK land. In a Midwestern study, only 14% of the PIK land was considered valuable wildlife cover in a survey made by 12 State fish and wildlife agencies (Evans 1985). Wildlife habitat was limited on PIK acres because this land was either fallowed, disced by mid-July, or had a cover crop planted after nesting began then destroyed early in autumn by fall plowing (Harmon 1987).

Since the 1930's, farm legislation has focused on 2 objectives: (1) to enhance farm incomes and; (2) stabilize farm prices (Food Security Act 1985). However, the traditional farm lobby that influenced previous farm bills has lost strength over time. A number of organized interests with policy goals distinctly different from farm and agri-business lobbies have emerged. These groups keep a close watch on what others are doing in their areas of expertise, and they have a comprehensive knowledge of current activities and projects within governmental agencies (Browne 1988).

A coalition emerged that helped shape the conservation provisions of the Food Security Act of 1985. About 25 major conservation organizations, including American Farmland Trust, Audubon Society, National Association of Soil and Water Conservation Districts, Wildlife

Management Institute, Wildlife Federation, and Sierra Club, representing conservation districts, wildlife, forestry, land-use, range, and water interests formed this coalition (Chapman 1987, Harmon 1987). These groups brought about a fundamental change in agricultural policy. For the first time, resource protection was directly linked to the control of surplus crop production.

Many of the organizations in this coalition are old and powerful. For instance, National Wildlife Federation was ranked by independent judges as one of the two most powerful interests in Washington in 1984 (Strohm 1986). Much of the expansion of these groups is attributed to that percentage of the public who has excess income and a willingness to spend it on aesthetics (Browne 1988). The conditions for these interests to impact and reform agricultural policy were ripe. Representatives of these interest groups claimed that USDA programs were insensitive to environmental problems including the destruction of songbirds by chemical spraying, game through habitat conversion, fish through erosion and water pollution, forests through unnecessary clearance, and the outdoor recreation dependent on these resources (Browne 1988). Wildlife interests were tied-in with other resource concerns because declines in fish and wildlife were associated with agricultural practices that increase soil erosion and reduce water quality (Carlson 1985). Policies designed to reduce soil erosion tend to improve upland-wildlife-habitat quality (Miranowski and Bender 1982).

Questions were being asked and brought to the attention of policymakers. For instance, why does one USDA agency sell a highly erodible farm with a high corn base (official record of production history that is the basis of CCC program benefits), then a second agency make crop subsidy payments to the new owner, while a third agency spends time convincing the farmer to control erosion (Risley and Budzik 1988).

The conservation lobby was successful because policymakers realized that the proposed alternatives could trim expenditures. The CRP is estimated to cut federal expenditures through reducing deficiency payments, commodity loan outlays, and diversion payments (Grossi 1988). Zinn (1988) stated that everyone wants success so these programs do not receive close scrutiny. Farmers like guaranteed income at almost no cost; environmentalists like protection of resources

and habitat values; and commodity groups and budget agencies like reduction in crop production and federal outlays.

Besides soil erosion control, wildlife habitat improvement gets specific mention as one of the stated objectives of the CRP (Food Security Act 1985). Although all the various cover practices probably enhance wildlife habitat, three specific cover practices (CP-4 Wildlife Habitat, CP-9 Shallow Water Areas for Wildlife, CP-12 Wildlife Foodplots) target farmland wildlife enhancement. Some type of wildlife will respond to whatever cover practice is implemented on retired land.

Farmland wildlife management is primarily directed at small game, deer, furbearers, waterfowl, and songbirds. Wildlife management on CRP land implies that there are stated objectives and efforts are being made toward meeting those objectives. Wildlife management has been defined as (Giles 1978:4);

the science and art of making decision and taking actions to manipulate structure, dynamics, and relations of populations, habitats, and people to achieve specific human objectives by means of the wildlife resource.

To determine if and how Virginia CRP participants formulated and acted upon their wildlife management objectives was the crux of this survey research.

1.5 CRP and Wildlife: The Farmers' View

This study examines the wildlife management on CRP land from the perspective of the enrolled farmers. Chapter 2 describes the methods used to determine what the farmers' view toward wildlife management on their retired land. Chapter 3 reports the findings of the mail survey and Chapter 4 is a discussion of these results. The Appendices include a copy of the questionnaire with summary data, cover letters that were enclosed with the mailings and the comments that respondents wrote on the questionnaire.

Chapter 2: METHODS

The strategy used to meet the study objectives was a mail survey sent to one-half the CRP participants in Virginia. A questionnaire (Appendix B) was designed, pre-tested, and fine-tuned prior to the Virginia mailings. Dillman's (1978) total-design-method was followed in questionnaire design and mailing procedure.

An ASCS official was contacted and agreed to send a memo to all Virginia County offices requesting that CRP participant names and addresses be supplied. All representatives of the County Offices complied with this request. The names and addresses (N = 1622) were entered on a Spires Data-base MAILLIST computer file. The addresses were scanned for duplicates which were dropped from the list. One-half of the remaining CRP respondents (n = 808) were selected randomly using an Econometrics Toolkit (Greene 1988) random number generator on a micro-computer. This sample was the target for the mail survey. MAILLIST conveniently generated envelope labels, inside addresses and salutations for cover letters, and had the capability of searching and sorting addresses.

2.1 Mail Survey Design

A mail survey was deemed the best method for gathering information to meet objectives due to budget constraints. The obvious advantages of mail surveys are the relatively simple administrative procedure and savings in manpower and money when compared to telephone or personal interview surveys (Filion 1978). Researchers can afford to survey a larger sample size using a mailing instead of personal interviews. Mail surveys permit contact with persons living in remote areas and often can elicit responses from people too busy for personal interviews (Linsky 1975). Answers to mail surveys are generally as accurate as those obtained from interviews and are free of interviewer bias (Filion 1978). The disadvantages of a mail survey include a longer time period required to get results, lack of an interpreter to clarify question or word meaning, and probable lower response rate. The questionnaire design and the question wording can bias the responses in a mail survey.

The design of a survey is not as simple and straightforward as one inexperienced in such matters might imagine. Oppenheim (1966:3) summarized the survey design process:

Not everyone realizes that the design of a survey, besides requiring a certain amount of technical knowledge, is a prolonged and arduous intellectual exercise, in the course of which we are trying to get our own minds clear about our goals. We often find that, as the early stages of the research take shape, its aim undergoes a number of subtle changes as a consequence of greater clarity in our thinking. Such changes may require a new and better design, which in turn will lead to a better specification for the instrument of measurement, the questionnaire.

Dillman's (1978) Total Design Method was used to design and implement the survey. Some questions emphasized the present or past wildlife management that CRP participants used on their farms and retired farmland. Payne (1973:198) commented on the importance of measuring actual experiences:

Respondents, like other people, are very poor at predicting the future, even their own future behavior. They make mistakes in their forecasts for themselves from one hour to the next, let alone from one week to another, or from this year to a year from now... Actual experience is often a better guide to the future than present intentions are.

The initial survey question was designed to generate enough interest to stimulate the questionnaire recipient to start marking choices (Dillman 1978). It asked CRP participants to estimate the change in wildlife numbers on their farms over the last 3 years. This question asked

for a simple judgement call and was designed to stimulate the interest of the CRP participant. The remainder of the questionnaire asked CRP participants about their wildlife information sources, desire to improve CRP land wildlife habitat, reasons for or against improving habitat, past behaviors that aided wildlife, present management of CRP land, incentives required to improve CRP land, and respondent attributes. The length of the questionnaire was not a primary concern. Little evidence exists to suggest that longer mail questionnaires result in lower response rates (Kanuck and Berenson 1975). Dillman (1978) suggested that after 12 pages, response rate was affected negatively by questionnaire length. The questionnaire was put through a rigorous review process. Reviewers included college professors, graduate students, wildlife biologists, and farmers. After numerous refinements, the survey instrument was ready to be pretested in Iowa.

2.2 Pilot Survey

The Poweshiek County Conservation Board, Montezuma, Iowa agreed to send the pilot questionnaire to all (N = 245) CRP participants in the County. County CRP participant names and addresses were obtained at the local ASCS office. Pilot questionnaires consisted of 5 stapled pages (8.5 x 11") containing 36 questions. Bulk rate postage was used to send out the questionnaire. A stamped envelope and cover letter was enclosed with each questionnaire. No follow-ups to nonrespondents were incorporated into the pilot survey. All surveys were returned to the County Conservation Board office and forwarded to Virginia. Nearly half (49%) of the pilot surveys were returned for analysis. Some questions were reworded, dropped, or added to the Virginia survey after evaluating responses to the pilot questionnaire.

2.3 *Virginia CRP Survey*

The questionnaire was reduced and printed on two pages of 16-pound white paper, folded and stapled to reduce weight and facilitate fit into the return envelope. The survey package included the questionnaire, stamped return envelope, cover letter, and screening letter (Appendices A, B, C and D). The screening letter was used to ensure that the person who made decisions on the CRP land was the one that answered the survey. It requested the name and address of the CRP manager if the initial questionnaire was not sent to that person. As an incentive to return the completed survey, all respondents were eligible to win by drawing, a Solo 425 backpack sprayer donated by Forestry Suppliers, Inc. A post-card reminder (Appendix E) was sent to questionnaire recipients one week after the initial mail-out that thanked respondents for returning their completed survey form or urged response if they had not done so. Three weeks after the initial questionnaire was sent out, it was sent out again with a more direct cover letter to nonrespondents (Appendix F). The questionnaire was sent to nonrespondents again 5 weeks after the first mail-out with another cover letter that urged prompt response (Appendix G). Follow-ups are a proven method of increasing response rates (Kanuck and Berenson 1975 and Dillman 1978).

Survey responses were coded, given variable names, and typed by category (Table 2). Data were coded onto a floppy disk then uploaded onto a mainframe computer file and analyzed using Statistical Analysis System (SAS). Ten percent ($n = 62$) of the coded surveys were randomly selected and checked for coding errors. Of 2,728 variables checked, fewer than 0.5 percent ($n = 13$) were found as coding errors.

Some of the hypotheses tested ($\alpha = 0.05$) with the mail survey data from Virginia CRP participants include:

- CRP participants have the same demographic attributes as typical Virginia farmers.

Table 2. Name, definition, and scale of variables used in hypotheses testing.

VARIABLE	SCALE
ACRE (total no. of acres farmed)	ordinal
AGE	ordinal
CASH (require money to implement wildlife plan)	nominal
DIST (home distance from farm)	ordinal
EDU (years of formal education)	ordinal
FARM (type of farm)	nominal
FUTR (want habitat improvement for descendents)	nominal
GAME (want habitat improvement to improve hunting)	nominal
HABI (used cover practice to aid wildlife)	nominal
HUNR (no habitat improvement--attracts hunters)	nominal
IMP (desire to improve wildlife habitat)	nominal
MORE (more land eligible for CRP)	ordinal
OLD (age of respondent)	ratio
OWN (owner or operator)	nominal
RETR (no. of acres in CRP)	ordinal
SEE (want habitat improvement to see wildlife)	nominal
SEX	nominal
TREE (no. of CRP acres in trees)	ordinal
YRS (years in farming)	ordinal

- Desire to improve wildlife habitat on CRP land is independent of CRP participant attribute variables.
- “Wildlife habitat” establishment on CRP land is independent of CRP participant attribute variables.
- Requirement of cash payment to permit wildlife plan implementation is independent of CRP participant attribute variables.
- The response “attract hunters” as main reason for not wanting to improve wildlife habitat is independent of CRP participant attribute variables.
- The responses “seeing wildlife, hunting opportunities for self, and future values of wildlife” as most important reasons to improve wildlife habitat are independent of CRP participant attribute variables.
- A cash payment requirement to implement a wildlife plan on their CRP land is independent of CRP participant attribute variables.

Frequencies were determined for all the variables, means and standard errors were calculated on the continuous data (Appendix B). Categorical variables were arranged into contingency tables and were tested for independence (homogeneity) using Chi-square statistics on SAS computer system (SAS Institute Inc. 1985). Contingency tables allow the hypothesis that frequencies of occurrence of one variable are independent of the frequencies in the second variable to be tested. Virginia agricultural census statistics (U.S Dep. of Commerce 1984) were used to determine expected frequencies of sex and age to compare typical Virginia farmers to Virginia CRP participants. Chi-square goodness of fit tests were used to compare census and mail-survey data.

To test the correlation between attribute variables, Spearman correlation coefficients were computed. Correlations measure the strength of a linear relationship between 2 random variables. Coefficient values range from -1 (negative correlation) to +1 (positive correlation) with 0 denoting

no correlation. The Spearman rank correlation coefficient can be used as a test of independence between two variables when they are not normally distributed and are both rankings (Snedecor and Cochran 1978). Although not all attributes compared were ordinal data (i.e. sex), they were assumed to be rank variables for this procedure.

Chapter 3: RESULTS

The highest concentration of CRP participants in Virginia was in the Piedmont region (Figure 1). As of August 1988, 23 Virginia counties had no one in CRP while 47 counties had from 1 to 9 CRP participants (Table 3).

3.1 Response Rate

The usable response rate of the Virginia mail questionnaire was 76% (n = 616). The majority (60%) of responses were returned within the first 2-week period of initial mailing (Figure 2). Fifty-four questionnaires (7%) were returned, but were unusable because they were too incomplete (23), returned with “not interested” statement (13), not in the CRP (8), or gave other reasons (10).

Thirty-nine of the initially contacted CRP participants indicated that they were not managing this land and submitted the name and address of their land manager. Of the 39 land managers contacted, 18 completed the questionnaire.

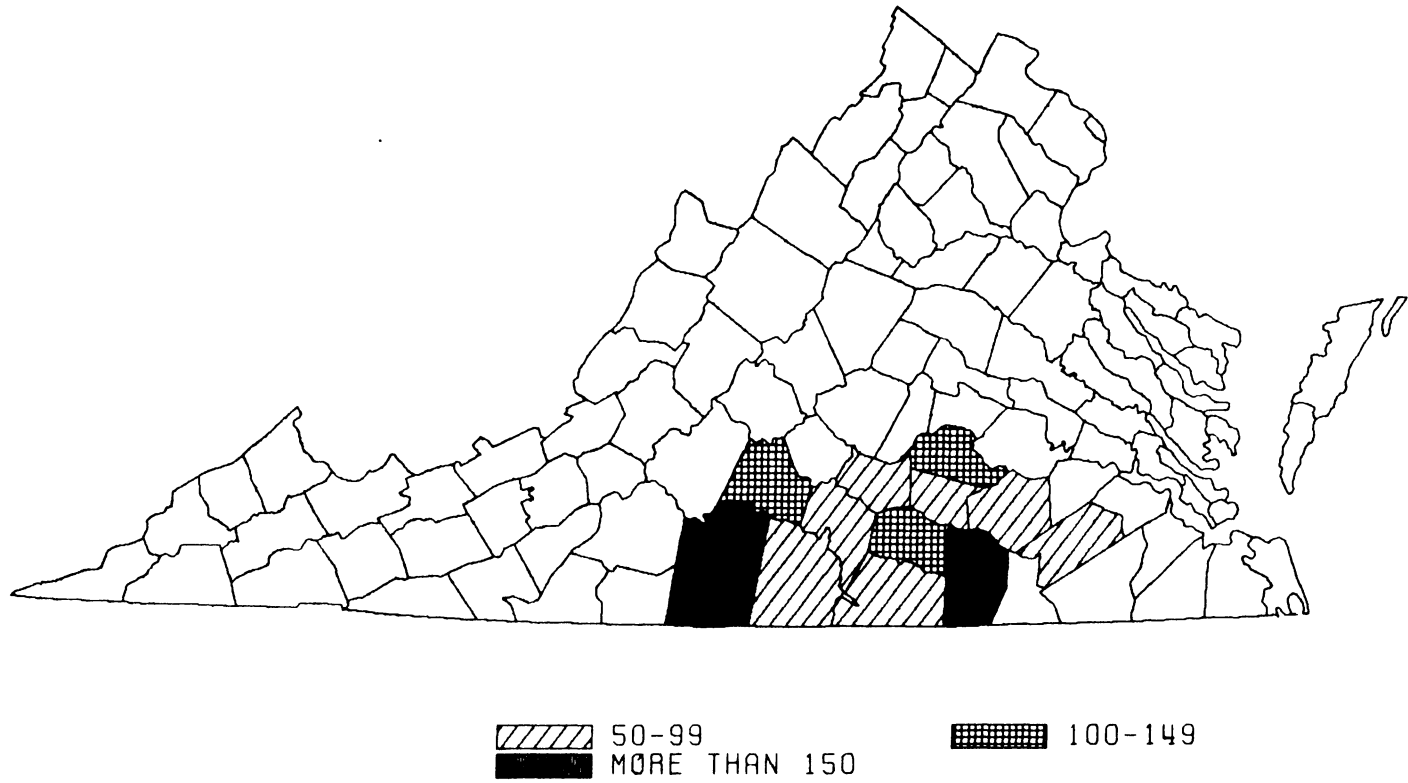


Figure 1. Virginia map showing counties with highest concentration of CRP participants.

Table 3. Number of CRP participants by Virginia County through August 1988 sign-up.^a

County	n	County	n
Accomack	4	Lancaster	9
Albermarle	1	Lee	1
Amelia	105	Loudin	2
Appomattox	25	Louisa	4
Augusta	1	Lunenburg	107
Bedford	4	Madison	3
Brunswick	153	Mecklenburg	92
Buckingham	9	Middlesex	5
Campbell	107	Montgomery	1
Caroline	7	Nelson	6
Carroll	10	Northampton	2
Charlotte	65	Northumberland	15
Chesterfield	6	Nottoway	53
Culpeper	8	Orange	9
Cumberland	11	Page	3
Dinwiddie	99	Patrick	30
Essex	30	Pittsylvania	155
Fauquier	9	Powhatan	2
Floyd	1	Prince Edward	95
Fluvanna	8	Prince George	31
Franklin	4	Prince William	2
Giles	1	Rappahannock	2
Gloucester	2	Richmond	32
Goochland	1	Rockbridge	2
Grayson	7	Rockingham	3
Greene	1	Shenandoah	2
Greensville	15	Smyth	1
Halifax	92	Southampton	9
Hanover	7	Spotsylvania	3
Henrico	3	Strafford	21
Henry	16	Suffolk	1
Isle of Wight	4	Sussex	55
James City	1	Tazewell	2
King and Queen	26	Washington	1
King George	7	Westmoreland	24
King William	8	Wythe	3

^a Counties not on list had no CRP participants.

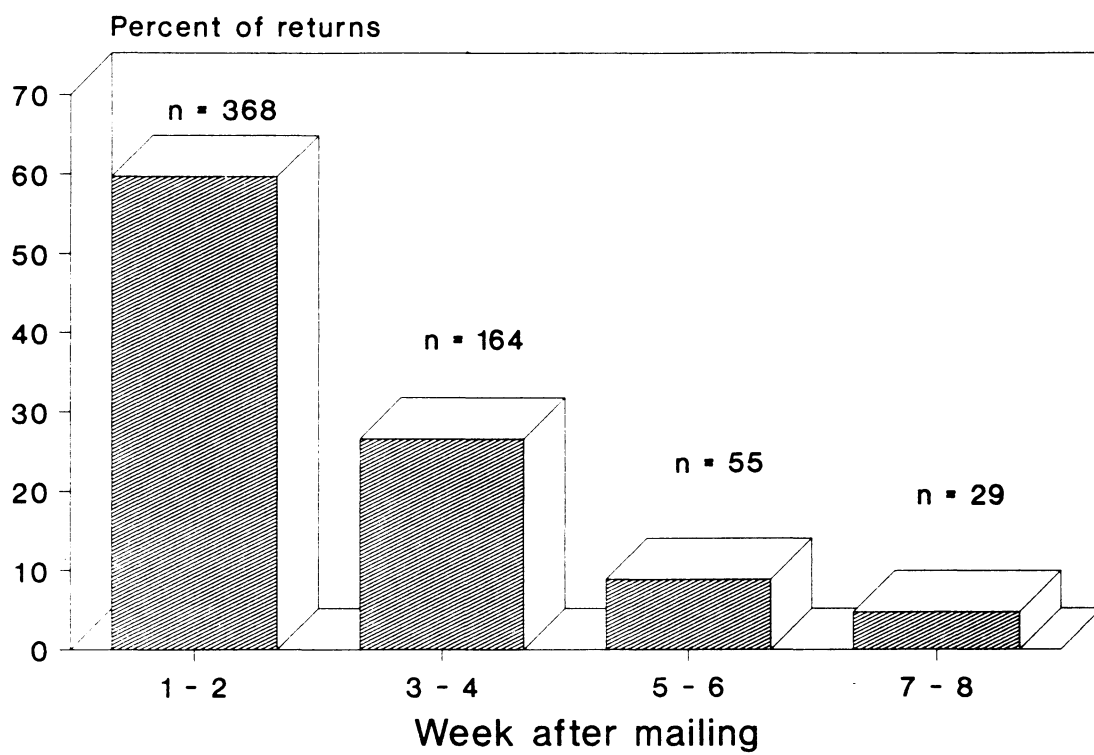


Figure 2. Rate of survey returns over four 2-week intervals following initial mailing.

3.2 Nonresponse Bias

Data were analyzed for nonresponse bias by looking at trends in responses to 3 variables over 4 two-week time periods; respondent age (AGE; 6 categories), education (EDU; 6 categories), and desire to improve CRP wildlife habitat (IMP; 2 categories). Contingency table analysis was used to test independence of the variables over the response period. It was assumed that a significant test statistic would indicate a change over time and a probable nonresponse bias. The results were not significant (AGE, $\chi^2 = 14.98$, $p = 0.45$, 15 d.f.; EDU, $\chi^2 = 12.65$, $p = 0.63$, 15 d.f.; IMP, $\chi^2 = 5.49$, $p = 0.14$, 3 d.f.). Although lack of nonresponse bias was not proven, concern would be greater if a significant change in responses was found over time. No attempt was made to contact nonrespondents to the mail survey.

3.3 Attributes of CRP Participants

Most CRP participants (82%) owned the land and 13% owned a portion and rented a portion of the land they had enrolled in the CRP. Age category comparison of Virginia CRP respondents ($\bar{V} = 60$ years) to all Virginia farmers ($\bar{X} = 53$ years) showed that CRP participants were significantly older ($\chi^2 = 96.6$, $p < .001$, 5 d.f.) than age category proportions reported in agricultural census statistics (U.S. Department of Commerce 1984). Most of the observed difference was due to a greater than expected number of CRP participants in the 65 and over age group ($\chi^2 = 49.04$, $p < .001$, 1 d.f.). More ($\chi^2 = 249$, $p < .001$, 1 d.f.) of the survey respondents were female (25%) than expected from census statistics (7.8%). Farming supplied 25% or less of most (78%) respondents income. The majority (70%) of respondents lived on or within 5 miles of their CRP land. Respondents controlled significantly more land ($\bar{X} = 323$ acres, $se = 23.4$, $t = 6.02$, $p < 0.001$) than the average Virginia farm ($\bar{X} = 182$ acres).

3.4 Interest in Improving Habitat

When Virginia CRP participants were asked if they would like to “improve wildlife habitat on their retired land” (IMP), 72% indicated yes. In Iowa, 73.5% indicated yes. Comparisons of the yes/no response toward desire to improve wildlife habitat on CRP with respondent attributes yielded some significant results (Tables 4 and 5). IMP was dependent on the age of respondents (AGE), sex (SEX), education (EDU) and size of operation (ACRE). Fewer respondents than expected in the 45-54 year age group indicated they did not want to improve wildlife habitat ($\chi^2 = 9.95, p = 0.001, 1 \text{ d.f.}$), while more respondents than expected in the over 65 age group indicated they did not want to improve the wildlife habitat on their retired land ($\chi^2 = 14.7, p < 0.001, 1 \text{ d.f.}$). Fewer than expected females desired wildlife habitat improvement while more than expected females and fewer than expected males did not want this improvement for their CRP land ($\chi^2 = 34.4, p < 0.001, 1 \text{ d.f.}$). Respondents with less than a ninth grade education were less inclined to desire habitat improvement than expected ($\chi^2 = 6.72, p = 0.01, 1 \text{ d.f.}$). CRP participants with smaller acreages (< 100 acres) were less likely to want wildlife habitat improvement ($\chi^2 = 13.8, p < 0.001, 1 \text{ d.f.}$).

When the attributes that were significant with the variable IMP (desire to improve wildlife habitat) were compared with each other (Table 6), age classes < 35 and 45-54 had fewer females than expected while the > 65 group had more females than expected ($\chi^2 = 27.76, p < 0.001, 1 \text{ d.f.}$). More females controlled operations of < 100 acres ($\chi^2 = 7.37, p = 0.007, 1 \text{ d.f.}$). Fewer respondents than expected in age class 35-54 and more in the > 64 group had less than a ninth grade education ($\chi^2 = 13.27, p < 0.001, 1 \text{ d.f.}$). More than expected respondents in the > 64 age class controlled < 100 acres of land. Respondents who controlled < 100 acres of land were more likely to have less than a ninth grade education ($\chi^2 = 8.54, p = .003, 1 \text{ d.f.}$).

Spearman correlation coefficients between “desire to improve wildlife habitat” (IMP) and attribute variables, and between the attribute variables themselves were computed (Table 7). Due to large sample size, many of the correlations were significant. Correlations with > 0.2 or < -0.2

Table 4. Chi-square test results comparing “desire to improve CRP land for wildlife” (IMP) with 12 attribute variables.

Variable	Definition	d.f.	Chi-sq.	p-value
AGE		5	20.56	0.001
SEX		2	36.07	< 0.001
DIST	home distance from farm	5	7.25	0.203
INC	farm income	4	2.19	0.700
EDU	education	6	17.58	0.004
FARM	type of farm	3	1.73	0.630
YRS	years in farming	4	5.94	0.204
OWN	owner or operator	2	1.47	0.478
MORE	more land eligible for CRP	2	3.15	0.207
ACRE	total no. of acres farmed	5	15.1	0.010
RETR	no. of acres in CRP	6	8.62	0.196
TREE	no. of CRP acres in trees	6	6.4	0.380

Table 5. Categorical breakdown of variables that were significant with “desire to improve wildlife habitat” (IMP) on CRP land.

	IMP	
	<i>yes</i> percent frequency	<i>no</i> percent frequency
AGE		
< 25	0.7	0
25-34	4.6	3.1
35-44	11.2	9.3
45-54	22.3	10.6 (<) ^a
55-64	27.4	26.1
> 64	33	50.9 (>) ^b
n = 591		
SEX		
male	81.5	58 (<)
female	18.5 (<)	42 (>)
n = 601		
EDU (years)		
< 9	6.8	13.9 (>)
9-10	8.2	12.7
11-12	37.2	41.8
13-15	21.1	14.5
16	12.4	7.3
> 16	14.3	9.7
n = 592		
ACRE (total acres farmed)		
< 100	34.6	51.5 (>)
100-200	27.8	20.1
201-300	13.3	8.9
301-400	5.5	4.1
401-500	3.9	2.4
> 500	14.9	13
n = 605		

^a significantly fewer than expected ($\alpha = 0.05$)

^b significantly more than expected ($\alpha = 0.05$)

Table 6. Relationships between CRP participant attributes that were significant with “desire to improve wildlife habitat” (IMP).

	SEX	
	<i>male</i> percent frequency	<i>female</i> percent frequency
AGE		
< 35	6.2	0 (<) ^a
35-44	12.2	5.6
45-54	22.1	8.3 (<)
55-64	29	24.3
> 64	30.5 (<)	61.8 (>) ^b
n = 596		
ACRE (total acres in farming operation)		
< 100	36.8	49.7 (>)
≥100	63.2	50.3
n = 612		
		EDU (formal education)
	≤8 years	> 8 years
AGE		
< 35	3.8	4.8
35-44	0 (<)	11.7
45-54	5.8 (<)	20.4
55-64	17.3	28.8
> 64	73.1 (>)	34.2
n = 590		
ACRES		
< 100	59.6 (>)	37.8
≥100	40.4	62.2
n = 602		
		ACRE
	≤100 acres	> 100 acres
AGE		
< 35	2.5	6.1
35-44	9.2	11.4
45-54	16.4	20.5
55-64	25.2	29.4
> 64	46.6 (>)	32.7
n = 599		

^a significantly fewer than expected ($\alpha = 0.05$)

^b significantly more than expected ($\alpha = 0.05$)

coefficients were IMP and SEX (0.244), AGE and EDU (-0.269), AGE and SEX (0.327), and INC and ACRE (-0.35). A change in the magnitude of the SEX variable (toward female) coincides with an increase in the IMP variable, in this case toward not wanting to improve wildlife habitat on CRP land. Likewise, an increase in AGE is linearly associated with an decrease in EDU and an increase in SEX variable (toward female). The proportion of income from farming (INC) is linearly associated with the number of acres farmed. Income from farming is directly related to number of acres farmed.

Given a choice of 9 reasons for improving wildlife habitat on their CRP land, the respondents were asked to indicate the most important. "Seeing wildlife" (23%), "hunting opportunities for self" (21%), and "wildlife values for future" (18%) ranked highest. "Seeing wildlife" and "wildlife for future" were independent of respondent attribute variables. "Hunting opportunities" response was dependent on sex and age attributes of the respondents (Table 8). Fewer than expected female respondents ($\chi^2 = 11.53$, $p = 0.001$, 1 d.f.), and more of the 18-34 age group ($\chi^2 = 9.02$, $p = 0.003$ 1 d.f.) wanted wildlife habitat improvement because of hunting opportunities.

Respondents who indicated a desire to improve wildlife habitat were asked about the type of wildlife they would be most interested in managing for on their CRP land. Most wanted to manage for gamebirds (60%), followed by deer (16%), songbirds (9%) and waterfowl (4%).

Those respondents that indicated a positive interest in improving wildlife habitat on their CRP land were asked about their past behaviors that aided wildlife on their farms. A preponderance (79%) of this group indicated at least one behavior (e.g. planted trees and shrubs for wildlife, avoided grazing woodlands, left brushy fencelines) that was used purposely to aid wildlife (Table 9).

On the other hand, respondents who did not want to improve the wildlife habitat on their retired land were asked their reasons. Most (43%) indicated that they wanted to avoid attracting unwanted hunters. Chi-square tests showed that fewer than expected CRP participants under age 55 (Table 10) indicated that attracting hunters to their land was the most important reason they did not want wildlife habitat improvement ($\chi^2 = 10.34$, $p = 0.001$, 1 d.f.). The second highest

Table 7. Spearman correlation coefficients between various CRP participant attribute variables and between desire to improve wildlife habitat (IMP) and attribute variables.

Variable	n	Spearman Correlation Coefficient	p Value
Correlations with AGE			
EDU (formal education)	590	-0.285	0.0001
INC (farm income)	578	-0.099	0.0167
SEX	553	0.327	0.0001
ACRE (total acres farmed)	553	-0.011	0.0108
TREE (CRP acres in trees)	598	0.027	0.5107
HABI (habitat establishment)	599	-0.112	0.0061
MORE (more land eligible for CRP)	470	0.076	0.0994
Correlations with EDU			
SEX	600	0.001	0.9726
ACRE	558	0.156	0.0002
TREE	601	0.086	0.0340
HABI	602	0.124	0.0023
MORE	473	-0.110	0.0168
Correlations with INC			
SEX	588	0.054	0.1947
ACRE	546	-0.350	0.0001
TREE	589	0.021	0.6050
HABI	590	-0.017	0.6836
MORE	464	0.177	0.0001
Correlations with ACRE			
SEX	565	-0.171	0.0001
TREE	567	0.124	0.0030
HABI	568	0.060	0.1522
MORE	557	-0.036	0.4335
Correlations with IMP (desire to improve wildlife habitat)			
AGE	588	0.181	0.0001
EDU	592	-0.164	0.0001
INC	580	-0.053	0.2030
SEX	601	0.244	0.0001
ACRE	559	-0.075	0.0750
TREE	604	-0.025	0.5464
HABI	605	-0.135	0.0009
MORE	475	0.079	0.0861
RETR	530	-0.098	0.0244

Table 8. Categorical breakdown of attribute variables significant with “hunting opportunities for self” as most important reason to improve wildlife habitat on CRP land.

	<i>hunting opportunities</i> percent frequency	HUNT	<i>other reason</i> percent frequency
AGE			
< 35	12.3 (> ^a)		3.5
35-44	13.5		10.1
45-54	23.6		21.7
55-64	23.6		28.5
> 64	27		36.2
n = 426			
SEX			
male	93.4		76.8
female	6.6 (< ^b)		23.2
n = 432			

^a significantly more than expected ($\alpha = 0.05$)

^b significantly fewer than expected ($\alpha = 0.05$)

Table 9. Past wildlife management behaviors of farmers who desired wildlife habitat improvement on their retired land (n = 436).^a

Past Behavior ^b	n	Percent
planted trees and shrubs for wildlife	128	29.4
planted foodplots for wildlife	167	38.3
planted grasses and legumes for wildlife cover	178	40.8
fenced pond or stream bank to keep livestock out	19	4.4
stacked brushpiles to benefit wildlife	95	21.8
left trees standing for wildlife food or shelter	169	38.8
avoided grazing woods	110	25.2
left some crops unharvested	149	34.2
avoided mowing set-aside acres before August	152	34.9
avoided removing brushy ravines or fencelines	101	23.2
other	10	2.3

^a 21.5 percent have not tried to manage wildlife on their farm

^b Of the CRP participants that managed for wildlife in the past, 86 percent (n = 294) indicated using more than one practice to enhance wildlife habitat.

ranking reason for not wanting wildlife habitat improvement was lack of money to spend on wildlife habitat (16%).

When asked what they liked most about the CRP, the majority of respondents (55%) indicated the dependable annual income, followed by erosion control (22%) and tree planting (14%). Only 6% checked enhancement of wildlife habitat as the CRP benefit most liked, but 20% indicated it as a second most important benefit.

3.5 Wildlife Habitat Information Sources

When asked if they had been informed about improving the wildlife habitat on their CRP land, 62% indicated they had not. Over one-third of these checked “No, but I wish someone would” (Figure 3). Of the respondents who did want to improve the wildlife habitat, 75% indicated they did not seek out information. County level ASCS-SCS personnel were the major source of wildlife habitat information for 24% of the respondents (Figure 4). Some commented that the information they did get was of a general or superficial nature. Less than 2% of the respondents got information from a wildlife biologist.

3.6 Present Management of CRP Land in Virginia

Most respondents (73%) knew the acreage and what was planted on their CRP land. Survey respondents in Virginia indicated that nearly half of their retired land was put into pines (49%), followed by fescue-clover mix (19%), and fescue (15%). Only 5.6% of the respondents' retired land was signed up as wildlife habitat, and less than 1% was designated as wildlife food plots (Figure

Table 10. Categorical breakdown of CRP participant attribute that was significant with desire to “avoid attracting hunters” as most important reason for not wanting to improve wildlife habitat on their retired land.

	<i>attracts hunters</i> percent frequency	<i>other</i> percent frequency
AGE < 55	10.4 (<) ^a	34.1
≥55 n = 152	89.6	65.9

^a significantly fewer than expected ($\alpha = 0.05$)

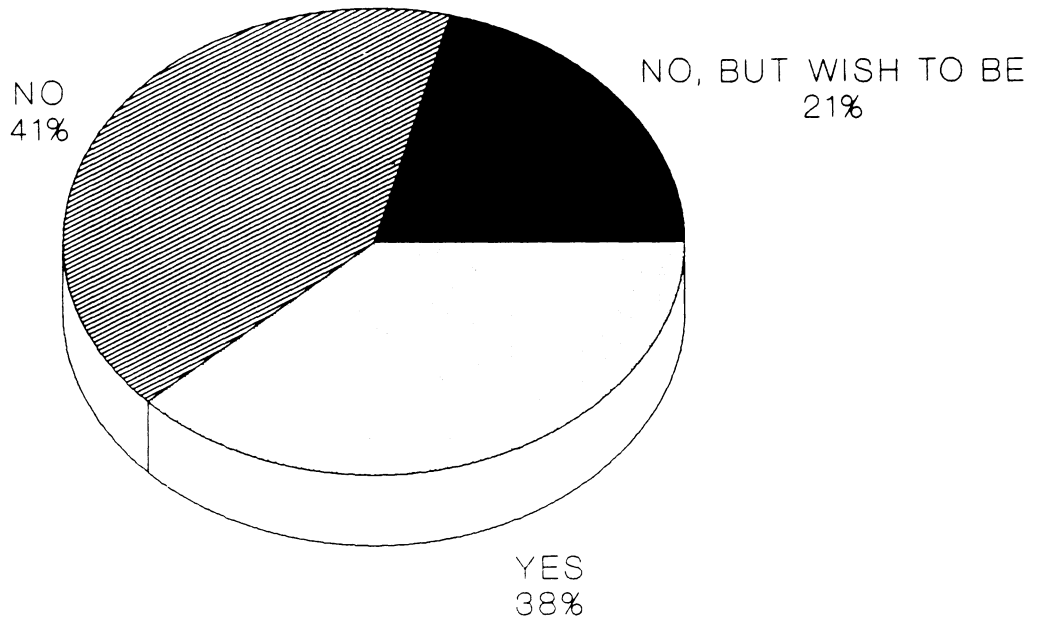


Figure 3. Results to question that asked whether or not CRP participants have been informed about wildlife habitat enhancement on their retired land.

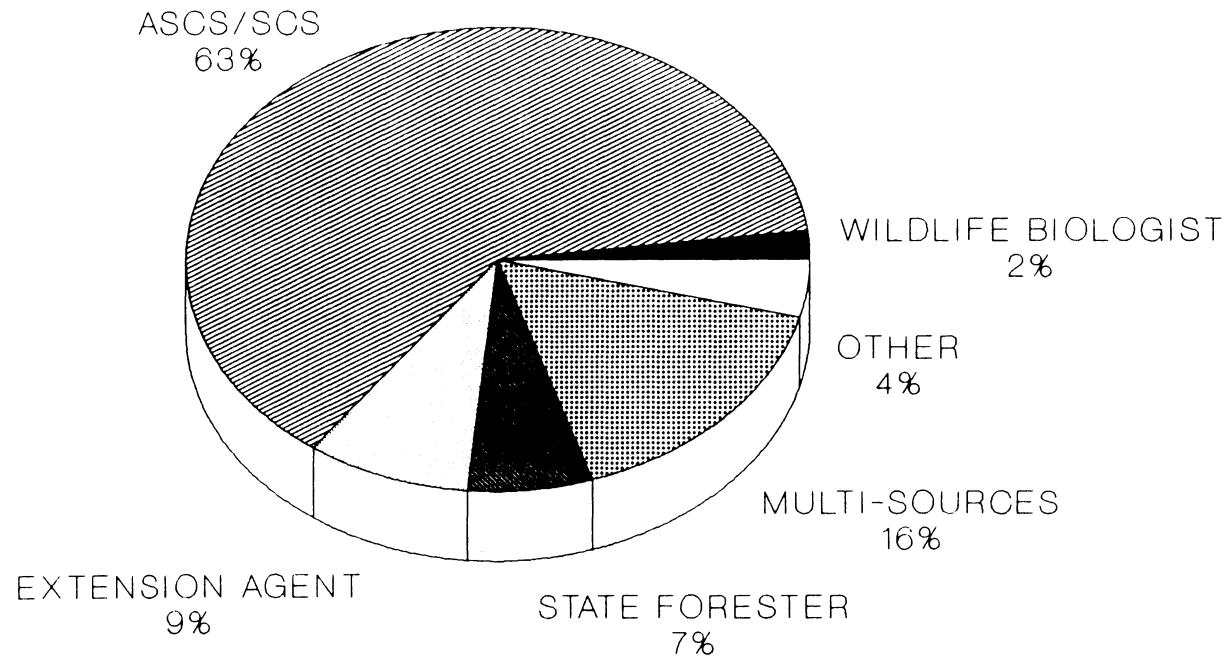


Figure 4. Sources of information reported by respondents who indicated they were informed about improving the wildlife habitat on their retired land.

5). When asked about the conservation practices and acreage for which they signed up, 47% of the acres reported were put into tree planting or already had trees established and were eligible for CRP (Table 11). The types of plants that respondents used to establish wildlife habitat were varied (Table 12). Few of the wildlife plantings ($n = 12$) were woody shrubs.

Respondents that implemented wildlife habitat (CP4) and wildlife food plots (CP12) were pooled (HABI) and compared with attribute variables (Table 13). HABI (wildlife habitat establishment) was dependent on attribute variables age, sex, education, landowner or renter (OWN), amount of land in CRP (RETR), and amount of CRP land planted to trees (TTRE). When contingency tables with overall significance were pooled into a 2x2 matrix, fewer than expected respondents over 65 have wildlife conservation practices for wildlife ($\chi^2 = 8.129$, $p = 0.006$, 1 d.f.). Fewer female ($\chi^2 = 7.37$, $p = 0.007$, 1 d.f.), more college educated ($\chi^2 = 10.84$, $p = 0.001$, 1 d.f.) and owner/renters ($\chi^2 = 7.48$, $p = 0.006$, 1 d.f.) incorporated wildlife habitat practices than expected (Table 14).

For weed control, 43% of the Virginia respondents indicated that they mowed their entire CRP acreage. One-half of this group checked that the mowing was done before August. Of those respondents who planted only grasses or herbaceous cover, most (58%) indicated that they mowed the entire acreage to control weeds. There was no evidence that wanting to improve CRP wildlife habitat (IMP) had an effect on the “mow it all” behavior ($\chi^2 = 0.36$, $p > 0.95$, 3 d.f.). Very few respondents indicated that they took hay off their CRP land in 1988 (1%) as part of the drought relief program.

3.7 Leasing and Hunter Access

Most CRP land in Virginia (63%) was posted, and very little (4%) was leased to hunters or hunt clubs. Of those that did lease for money, the average amount charged was \$2.04 per acre per year ($se = \0.47, $n = 13$). Thirty leasers did not lease for cash and most indicated receiving other

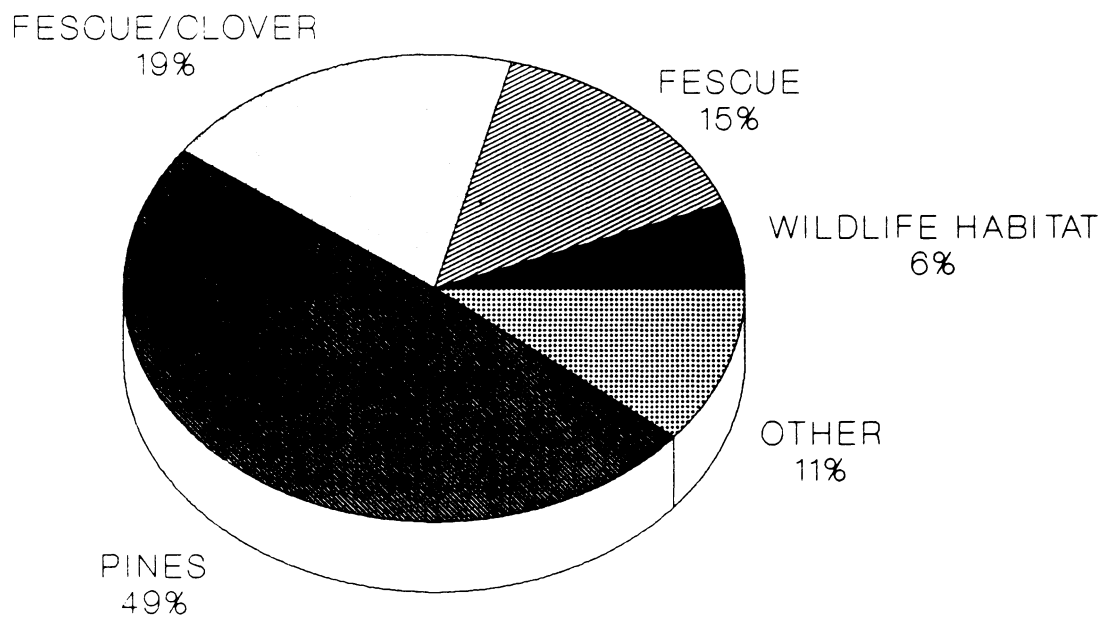


Figure 5. Types of plantings implemented on Virginia CRP land.

Table 11. Number of farmers and acreage statistics of various conservation practices implemented on Virginia CRP land.

Conservation Practice	n (farmers)	Mean (acres)	S.E.	Range (acres)	Sum (acres)	Percent
establishment of permanent introduced grasses	260	33.6	2.78	1-328	8736	33.95
establishment of permanent native grasses	23	26.5	6.47	2-100	610	2.37
tree planting	293	35.3	3.00	1-470	10327	40.13
permanent wildlife habitat	44	30.8	7.13	1-250	1357	5.27
field windbreaks	6	5.5	0.96	3-10	33	0.13
diversion	7	5.3	1.80	1-15	37	0.14
erosion control structure	26	12.8	3.92	1-100	333	1.29
grass waterways	42	4.9	0.70	1-20	204	0.79
shallow water areas for wildlife	13	5.2	1.50	1-20	67	0.26
vegetative cover -grass- already established	51	39.2	6.90	1-204	2001	7.78
vegetative cover -trees- already established	31	54.2	11.4	1-250	1681	6.53
wildlife food plots	21	7.3	2.40	1-50	153	0.59
vegetative filter strips	8	24.4	18.0	2-250	195	0.76

Table 12. Plants and acres that CRP participants planted as wildlife habitat or wildlife food plots.

Planting	n	acres
autumn olive	1	2
autumn olive, lespedeza, clover	1	19
bicolor lespedeza hedges, seresia lespedeza	1	3
bicolor lespedeza	1	
clover	3	4, 8, 30
clover, lespedeza	2	15, 24
clover, lespedeza, millet	1	5
clover, orchard grass, lespedeza strips	1	12
fescue, clover, lespedeza, millet	1	14
fescue, clover, lespedeza, orchard grass	2	9,12
fescue, clover, timothy	1	21
fescue, Ladino clover, Korean lespedeza	1	195
fescue, lespedeza, clover	8	4,10,12,17,29,34,37,102
fescue, lespedeza, millet	1	100
fescue, orchard grass	4	17,46,50,125
hickory and walnut	1	8
Ladino clover, orchard grass, Korean lespedeza	1	18
native grasses	1	31
oaks	1	7
orchard grass	3	7,16,18
sawtooth oak	1	5
shrub lespedeza, autumn olive	1	1
shrub lespedeza, orchard grass, clover	1	1
Southern pine	1	114
sunflowers	1	1
sweet, Ladino, and red clover, orchard grass	1	60
switchgrass, lespedeza, annuals	1	2
VA-70 and Korean lespedeza, loblolly pine	1	56
VA-70 and Korean lespedeza, orchard grass	1	20
VA-70 and Korean lespedeza, switchgrass	1	4
VA-70 lespedeza, clover, orchard grass	1	4
Virginia pine	2	23, 11
walnut	1	2
weeping lovegrass, Korean lespedeza, annuals	1	3
weeping lovegrass, lespedeza	1	2
wheat	1	1
wildlife grass mix	1	145
wildlife mixture	3	1,5,6
wildlife strips	1	10
yellow pine	2	30, 11

Table 13. Chi-square test results comparing respondents who implemented “wildlife habitat” on their CRP land (HABI) with 12 attribute variables.

Variable	Definition	d.f.	Chi-sq.	p-value
AGE		1	6.89	0.009
SEX		1	7.37	0.007
DIST	home distance from farm	5	6.16	0.291
INC	farm income	4	7.45	0.114
EDU	education	5	11.15	0.049
FARM	type of farm	3	2.87	0.411
YRS	years in farming	4	1.38	0.848
OWN	owner or operator	2	8.46	0.015
MORE	more land eligible for CRP	2	3.37	0.185
ACRE	total no. of acres farmed	5	6.78	0.237
RETR	no. of acres in CRP	1	28.86	< 0.001
TREE	no. of CRP acres in trees	1	9.41	0.002

Table 14. Categorical breakdown of variables that were significant with establishment of “wildlife habitat” (HABI) on CRP land.

	HABI	
	<i>wildlife practice</i> percent frequency	<i>no wildlife practice</i> percent frequency
AGE		
< 65	60	77
≥65	40 (<) ^a	23
n = 598		
SEX		
male	89.4	73.2
female	10.6 (<)	26.8
n = 611		
EDU (years)		
< 9	6.1	9
9-10	6.1	10.3
11-12	25.8	39.6
13-15	27.3	18.9
16	18.2	10.1
≥17	16.7	12.1
n = 601		
RETR (total acres in CRP)		
< 40	42.4 (<)	75
≥40	57.6 (>) ^b	25
n = 615		
TREE (CRP acres in trees)		
< 20	57.6	76
≥20	42.4 (>)	24
n = 615		
OWN (owner or renter)		
owner	72.7	82.7
operator	3	5.6
owner/operator	24.3 (>)	11.7
n = 603		

^a significantly fewer than expected ($\alpha = 0.05$)

^b significantly more than expected ($\alpha = 0.05$)

types of service from the leasees. Leasers ($n = 43$) had one attribute that was significantly different from the respondents who did not lease. More respondents who farmed > 200 acres leased their land to hunters than expected ($\chi^2 = 7.47$, $p = 0.006$, 1 d.f.).

When asked to indicate the reasons they did not lease their land to hunters, the predominant reasons were lack of enough wildlife habitat to make leasing worthwhile (19%), concern about accidents and liability (19%), desire to let friends and neighbors hunt for free (15%), privacy (11%), and desire to hunt own land (10%). Nearly half the respondents (48%) indicated that they would not allow lease hunting on their land no matter what fee was paid, but 10% would lease their land if their price were met, over half of which ($n = 30$) would lease for \$5 or less per acre per year.

Only one respondent indicated charging hunters by the visit (\$10). Thirty-two respondents would let hunters visit their land if their price per visit were met ($\bar{X} = \$26.62$, $se = \$5.33$). Nearly half (49%) of the respondents indicated that hunters could visit their land to hunt and there would be no charge. On the other hand, 42% indicated that they would not allow anyone to hunt, even if the hunter offered to pay.

A question was posed concerning an additional payment to CRP participants for providing public access to their land for hunting. The overwhelming majority (82%) of respondents would not consider allowing public access, while a portion (12%) would not require any additional payment and would allow access (Figure 6).

3.8 Financial Incentives to Implement Wildlife Plan

Virginia farmers were queried about their acceptance of wildlife plans developed for their CRP land. If a conservation organization paid the costs of putting a wildlife plan into action on their retired land, would farmers require an additional one-time money payment to implement this plan? The questionnaire provided the respondent 3 basic choices for answering this hypothetical situation (Appendix B). Respondents could indicate the amount of money they required to implement a

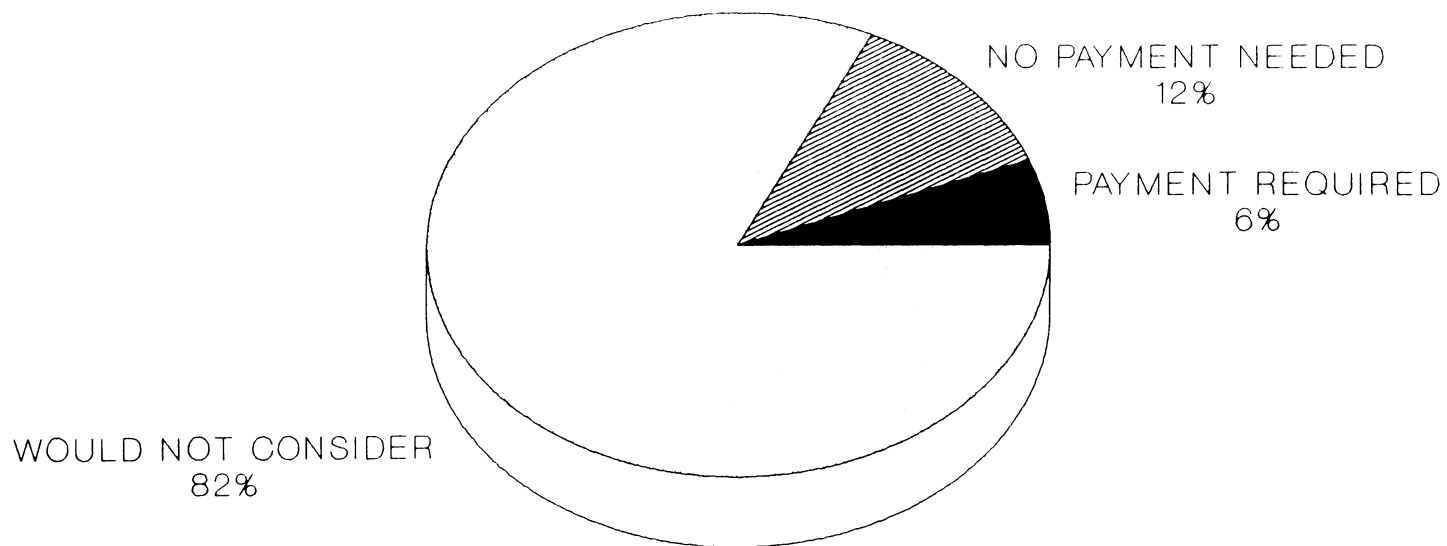


Figure 6. CRP participant responses toward allowing public access to their land retired land for monetary payment.

wildlife habitat plan, the amount of money they would be willing-to-pay to help implement it, or no interest in this type of opportunity. The results were (Figure 7): no response (17%), not interested (24%), those who would implement the plan if they would receive a one-time payment (37%), those who required no payment (19%), and a few who volunteered to pay a portion of the cost (3%). Of those respondents that required cash payment to implement a wildlife plan, the average indicated was \$32.97 per acre (se = \$1.05, n = 227). On the other hand, those respondents who indicated they would require no payment and would spend some of their own money on a wildlife plan, the average amount they would spend was \$9.76 per acre (se = 1.44, n = 21).

The graph resulting from a plot of respondent numbers versus cash payment to accept a CRP wildlife management plan was bimodal (Figure 8). Respondents who did and did not require a monetary payment to implement a wildlife plan (CASH) were compared with 12 attribute variables of CRP participants. CASH was independent of tested attribute variables except farm income ($\chi^2 = 10.37$, $p = 0.035$, 4 d.f.) However, when the individual cell chi-squares from this contingency table were examined, none were significant at the $\alpha = 0.05$ level.

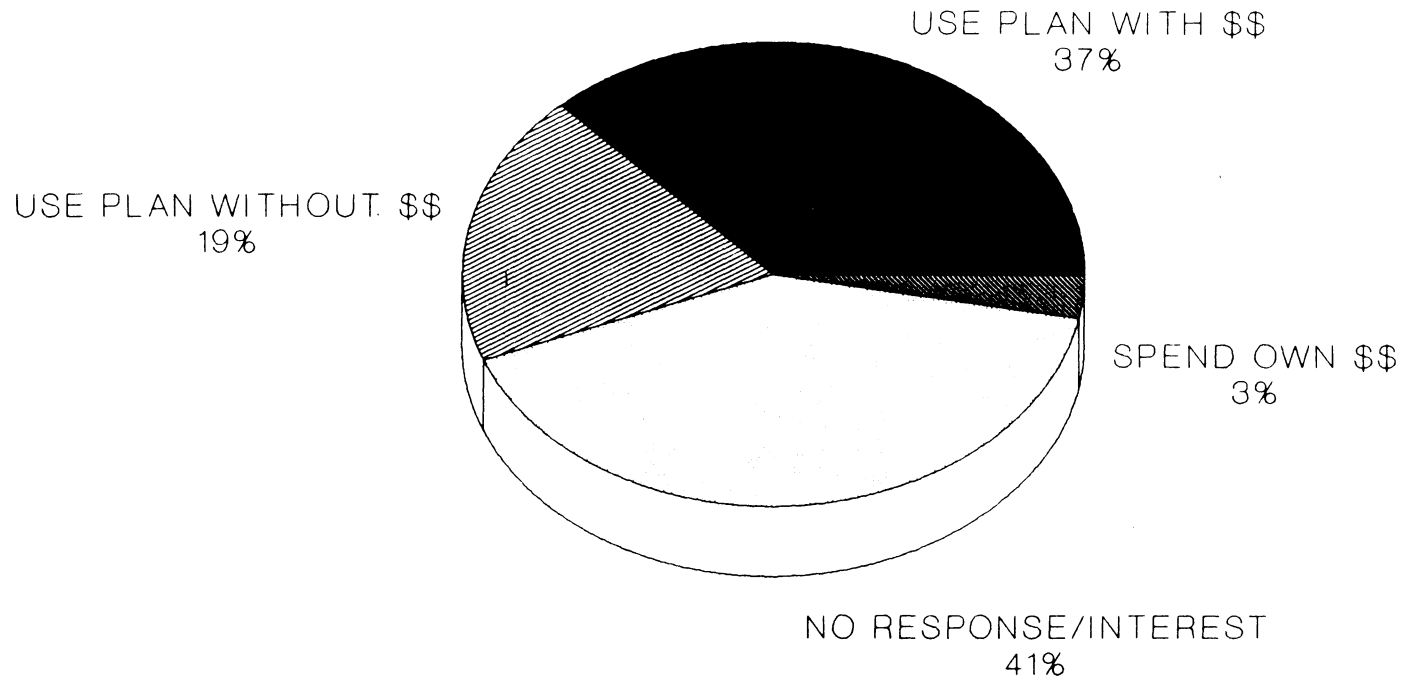


Figure 7. CRP participant responses toward implementing a wildlife plan on their retired land for a monetary payment.

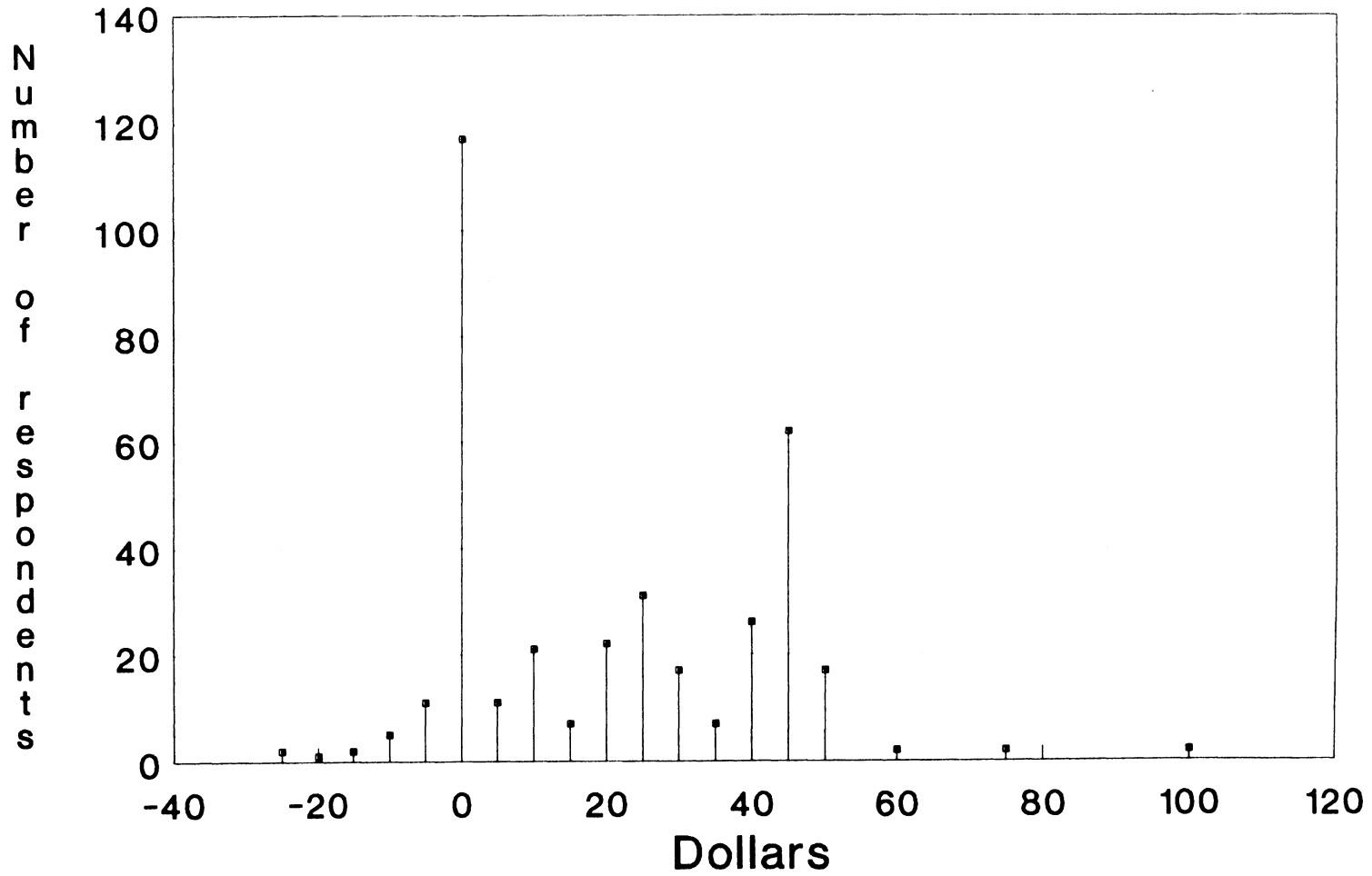


Figure 8. Amount of money and number of respondents who would either pay for or require payments to implement a wildlife plan.

Table 15. Chi-square results comparing respondents who required money to implement wildlife plan with 12 attribute variables.

Variable	Definition	d.f.	Chi-sq.	p-value
OLD	age	5	5.08	0.406
SEX		1	0.05	0.831
DIST	home distance from farm	5	2.54	0.771
INC	farm income	4	10.37	0.035
EDU	education	5	4.89	0.429
FARM	type of farm	3	2.93	0.402
YRS	years in farming	4	2.23	0.694
OWN	owner or operator	2	2.63	0.269
MORE	more land eligible for CRP	2	3.32	0.190
ACRE	total no. of acres farmed	5	8.68	0.122
RETR	no. of acres in CRP	6	1.34	0.969
TREE	no. of CRP acres in trees	6	3.54	0.739

Chapter 4: DISCUSSION

This study focused on Virginia CRP participants. Because CRP land has been retired from cropping for 10 years, management of this land can greatly affect farmland wildlife. The topics of this discussion cover CRP participant attributes, attitudes toward improving wildlife habitat, adequacy of wildlife information, management of CRP land, effect of hunters on habitat development, leasing and hunter access, and financial incentives required to implement wildlife management plans. Recommendations are made where appropriate within these sections.

4.1 Attributes of CRP Participants

CRP participants are not typical farmers. They are probably older and more likely to be female. Survey results showed that these are the very groups that have less interest in improving wildlife habitat. Older, retired farmers may be physically limited and require help and equipment to establish and maintain wildlife habitat. The lowest cost, easiest cover practice to establish and maintain on their CRP land is probably most appealing to female and older (> 64 years) farmers.

In Kellert's (1976) study of the American public, education and sex were the most consistent differentiators of people's attitudes toward animals and the natural world. Males were found to be more utilitarian and had a much greater desire for direct contact with wildlife, while females expressed more concern with protecting animals from suffering. People with less than a ninth grade education indicated far more fear, lack of affection, and disinterest in wildlife. College-educated people were less utilitarian-oriented and showed more concern for wildlife and wilderness. The > 64 age group was more utilitarian or negative toward animals than the 18 to 29 age group. Kellert also found that income was a poor predictor of people's view toward animals and the natural world.

Some of the results from this survey support Kellert's generalities. For instance, fewer than expected females desired wildlife habitat improvement or implemented a wildlife option on their CRP land, and more respondents than expected with less than a ninth grade education did not desire habitat improvement. The > 64 age group was more likely to reject habitat improvement. Although amount of income was not a variable in this study, the proportion of income from farming was examined and found not to be a significant variable in contingency table comparison of wildlife habitat establishment or desire to improve habitat.

Correlations between some attribute variables, such as age and sex, make it difficult to determine which one is most important in affecting responses. Limited-dependent variable regression analysis may be useful in determining the attributes that are significant predictors of a yes/no response.

4.2 Improved CRP Wildlife Habitat Desired

Virginia farmers in the CRP do have a high interest in improving wildlife habitat. Other studies have documented the importance of wildlife to landowners. A large proportion of New England forest owners (76%) agreed that they should be concerned about the welfare of wildlife

on their land even though it didn't belong to them (Alexander 1986). In Missouri, 83% of the landowners surveyed said that wildlife was at least slightly important in their farm management (Kirby et al. 1981).

When it comes to reasons why CRP participants desire wildlife, the results of this study are supported by similar results from other landowner surveys. The opportunity to see wildlife on their land was the top reason that forest landowners in New England and Wisconsin wanted wildlife (Alexander 1986, Ruff and Isaac 1986). Farmer surveys in Missouri, Vermont and the Great Plains showed a strong non-utilitarian value toward wildlife (Kirby et al. 1981, Kelley 1981, Johnson and Rockwell 1988). These findings disagreed with Kellert's (1981) statement that an aesthetic attitude is typically beyond the landowner's appreciation.

Although seeing wildlife and future values of wildlife were deemed as important reasons for improving wildlife habitat in this survey, the type of wildlife that the majority wanted to manage for was gamebirds. Evidently, CRP participants in Virginia consider the utilitarian gamebirds as the type of wildlife they most want to see, hunt, or have around for their descendents to enjoy.

4.3 Information and Education

The indicated desire to improve wildlife habitat on CRP land and high response rate to the wildlife management questionnaire suggests a sizable and seizable opportunity. The most obvious problem, according to the farmers' view, is an information gap. Enough farmers are interested in improving the wildlife habitat on their CRP land that a more concerted effort to inform and educate them about this potential would result in a probable increase in the populations of farm wildlife. Nowak (1988) has reported that information and education surrounding the conservation provisions of the Food Security Act appear to have a low priority to USDA administrators, and there is little consensus about who should inform whom about what. There were 2 reasons for the low priority of information and education programs surrounding the 1985 Food Security Act; (1)

there has been little or no increase in fiscal support for information and education at the state and county level, and (2) information and education activities continue to operate without clearly specified goals and responsibilities (Nowak 1988).

Most state wildlife agencies have neither the personnel nor the finances to adequately promote wildlife habitat enhancement on CRP land, although some state wildlife agencies have programs geared to promoting wildlife habitat improvement on private land. A 1985 survey found that state wildlife agencies allocated only about 1 employee-year per 2 million hectares of privately owned land (Wigley and Melchior 1987). State agency budgets are closely tied to license sales and are unable to effectively react to extensive USDA programs that temporarily retire large amounts of land. Because the USDA is already paying the rent to retire cropland, a few dollars spent on wildlife promotion by a state wildlife agency or conservation organizations could have a much greater impact on farmland wildlife than money spent in other programs. Some conservation organizations have recognized the opportunity that the CRP created for improving wildlife habitat and have acted on it. For instance, Pheasants Forever pays farmers to plant wildlife foodplots on CRP land and provides the seed to do so.

One-to-one advice and idea exchange between the CRP participant and the wildlife professional was desired, but evidently not adequately supplied. It is evident from the results that few farmers in the CRP have contact with wildlife biologists. Similarly, Kelley (1981) found that most Vermont farmers had never been contacted by Fish and Game Department biologists or technicians although they knew the names of local game wardens. Better cooperation and information exchange between state wildlife, forestry and USDA agencies could reduce the mixed signals that some CRP participants have received. A survey of CRP participants in Nebraska, South Dakota, and North Dakota found that the most important factor in determining what farmers planted on their retired land was the recommendation made by the federal agencies (Johnson and Rockwell 1988). Wildlife interests could benefit from attending Soil Conservation District committee meetings and convincing committee members of the wildlife concern and potential for habitat improvement that exists.

Some of the publications that attempt to promote wildlife enhancement on CRP land may be enough to pique the interest of farmers, but are not detailed enough to address the specifics of a particular piece of land or the objectives of the farmer. An in-depth publication probably is not of practical value for the same reasons. Videotapes have been used by some agencies to inform farmers about the wildlife options on their CRP land. Unless these videotapes are shown in ASCS offices while farmers are waiting to sign up for programs, they may not be seen. The utility of a video may not be high among 60-year-old farmers who may not own the proper equipment to play it. Furthermore, by using a video, the resource agency is talking to the CRP participants and not with them. A computer program that can integrate the farmers wildlife objectives with the specific information about the CRP field (e.g. size, shape, aspect, adjacent fields) could be valuable if set up in USDA offices and made available to potential CRP participants. A technician could get the information from the farmer and use the efficiency of the computer to print out a wildlife plan and estimate costs for the farmer to take home and contemplate.

USDA administrators and state wildlife agencies can act on the opportunity to realize the wildlife objectives of the CRP by targeting farmers that desire enhanced wildlife habitat on their retired land. Names and addresses of CRP participants are available at County ASCS offices. A card, letter, or brochure to each CRP participant from a wildlife biologist could open avenues of communication that are evidently desired by farmers. This communication should also invite one-on-one contact to elicit landowner objectives concerning farm wildlife, coupled with a strategy to achieve them. Personal contact is the best way to get landowners to state their objectives regarding wildlife on their farms, and is recommended early in the CRP participant's decision-making process to ensure cost-share for initial establishment of plants that will enhance wildlife habitat. Stated landowner objectives then become the basis of the planning process and measurement of success (Giles 1981). Even though farmers may already have their plans for CRP adopted, the plans are amendable and wildlife enhancement can be added.

The USDA can be lobbied to hire more of their own wildlife biologists or involve Cooperative Extension Service in wildlife habitat promotion because of these 2 reasons; (1) one of the objectives of the USDA is to create better habitat for fish and wildlife through improved food

and cover, and (2) the Secretary of Agriculture was mandated by Congress to supply technical assistance to establish cover practices on CRP land (U.S. Gov. Print. Office 1987). The desire for more contact with wildlife professionals was reflected in one farmer's comment, "Wildlife practices are not fully appreciated by the ASCS-SCS; they have a full plate with farm plan compliance. Somebody with a wildlife mission needs to get the word out."

4.4 CRP Management

Wildlife habitat on CRP land was desired by farmers, but had not been put into frequent practice. Isaacs and Howell (1988) reported that slightly more than 9 percent of the nationwide CRP sign-up was in forestry or wildlife practices. While tree planting was much more widespread on Virginia CRP land than Midwest states, little land was designated as wildlife habitat or foodplots. Few Virginia respondents (n = 12) indicated shrub plantings on their retired land. Woody shrub hedgerows provide food, cover, and travel lanes for farm wildlife and can increase the carrying capacity for certain species. The unpopularity of shrub planting by farmers may be a result of experiences with multi-flora rose (*Rosa multiflora*) plantings which had spread into pastures.

In the Southeast, tree planting on CRP land is very popular. More than 90 percent of the land enrolled in the Georgia CRP is earmarked for tree planting (Hertz 1988). Optimal woodland management plans for wildlife typically call for a diverse overstory, sparse stocking to allow understory production, and a long rotation to provide trees mature enough to produce heavy mast crops and form cavities (Johnson 1987). In pine plantations, wildlife habitat is best maintained through patchwork harvesting that ensures tree age and structure diversity (Johnson 1987). Because tree planting on CRP land was all initiated within a narrow window of time, wildlife use of pine plantations can be expected to drop off markedly as these trees mature. Large blocks of pine monocultures are attractive to most species of wildlife for only a short time; as the canopy closes after the first five years, wildlife use declines (Johnson 1987). Pine plantations two and three years

after site preparation produced the most total food plants for quail and declined drastically after the third year (Brunswig and Johnson 1972). Pine planted in former crop fields will have a different surrounding plant composition than cut-over pine plantations. Research on this difference could aid in designing management practices that favor wildlife food and cover.

Establishment of fescue on CRP land was common in Virginia. Large fields of fescue are known to be poor wildlife habitat, because it grows so densely and builds up a thick thatch that animals such as quail cannot get through it. Fescue fields have a low diversity of forbs which can be an important food source for wildlife. The preferred cover for bobwhites is 50 percent bare ground and 50 percent herbaceous or woody cover (Rosene 1969). Evidently fescue is an easy to establish cover that does a good job of controlling erosion, but it is not highly utilized as wildlife food or cover for small game.

The best wildlife habitat is generally thought of as a diverse mixture of plants with different form, structure and food-producing capabilities. Twenty- to 30-acre fields of fescue or pine probably do not provide high quality food or cover for wildlife. More research into efficient ways of improving wildlife habitat on large fields of fescue, fescue-clover, and pine plantings could prove important in CRP wildlife management. Management practices, that can improve wildlife habitat, such as burning, haying, or strip discing, need to be allowed on CRP land with the approval of a wildlife technician or biologist.

Mowing the entire CRP acreage is the most common method of weed control indicated. Mowing can have deleterious effects on wildlife populations if nests or cover are destroyed. Desire to improve wildlife habitat was found to be independent of the "mow it all" management practice. This behavior may be due to recommendations to mow their land biannually or an ingrained "harvest or mow" behavior pattern in farmers. One landowner commented on the survey form, "We like to mow our CRP acres twice a year to keep it looking good." If good farming practices are judged by fellow farmers according to productivity and tidiness (Lloyd and Wibberley 1977), efforts to adjust farmers' thinking to include wildlife habitat in what they deem good farming practices are needed. The best wildlife habitat on a farm is probably the area that looks most untidy

to the farmer. Again, this reveals the need for improving information and education on wildlife management for CRP participants.

Haying CRP land due to drought relief was insignificant in Virginia in 1988, although it was a common occurrence (50 percent) in the Iowa pilot survey results.

4.5 Effects of Hunters on Habitat Development

One of the most frequently-given reasons why landowners are hesitant to develop wildlife habitat is because hunters are attracted to land with high-quality wildlife habitat (Allen 1973, Johnson and Rockwell 1988). The results of this survey provided no exception to this statement, as attracting hunters was the most important reason given by respondents who did not want to improve the wildlife habitat on their CRP land. The statement that hunters, particularly thoughtless hunters, are effective in reducing or discouraging wildlife habitat development on private land (Ruff and Isaac 1987) is also supported by this research.

A Virginia hunter-access study found that hunting without permission, littering, and vehicle damage to field roads were major hunter-related problems (Bromley and Hauser 1984). Continued pressure must be put on hunters to behave in a socially acceptable manner. Hunter education efforts by state agencies should continue to be a priority. Peer pressure within hunting groups must be encouraged, because law enforcement is too incidental to have the needed impact.

Studies have shown that hunters are significantly less-educated and more frequently male (Peterle and Scott 1977, and Shaw 1977) than nonhunters. CRP participants who wanted to improve wildlife habitat for hunting opportunities were less likely to be female and more likely to be in the 18-34 age group. However, desire to improve wildlife habitat for hunting opportunities was independent of the level of education the respondent held.

The concern over attracting hunters is evenly distributed over respondent attributes except for age. The under 55 age group gave the unwanted hunter response less than expected. This age group may feel less threatened and more able to confront trespassers.

4.6 Leasing and Hunter Access

Virginia CRP participants had little interest in leasing their retired land to hunters. Leasing of land for hunting is important in some southern states (Burger and Teer 1981), but appears to be less significant as one moves north. Surveys in Missouri, Wisconsin, and New England revealed that few landowners lease the hunting rights to their land (Kirby et al. 1981, Alexander 1986, Ruff and Isaac 1987). The leasing of hunting rights by farmers is perceived as a fringe benefit and not worth the initial management investments (George 1966, Burger and Teer 1981). The price that a farmer can demand for hunting leases is a function of the availability of alternative areas to hunt and the uniqueness of experience (McDivitt 1987). An interesting point is that the CRP may be negatively affecting farmers currently leasing hunting rights, because there may be more land in the community that can be hunted for free, and the uniqueness of the experience may be lessened. Extra income from lease hunting is not a suitable option for most Virginia CRP participants.

An additional payment for providing public hunting access to their CRP land was overwhelmingly opposed by respondents. Farmers want to control who goes on their land and may not trust strangers with guns.

4.7 Incentives to Develop Wildlife Plan

Landowners are not receptive to the idea of taking monetary payments to implement plans to aid wildlife. A Missouri study (Kirby et al. 1981) found that farmers ranked cash assistance fifth in types of assistance desired to improve wildlife habitat. The majority of Vermont farmers responded negatively when asked if they would accept monetary payments for incorporating wildlife programs on their land (Kelley 1981). Monetary payments to conduct specific wildlife management practices were not a popular incentive with New England's non-industrial forest landowners (Alexander 1986). Objections to more applications, regulations, and red tape may hinder acceptance of a paying program to stimulate wildlife habitat improvement. A problem with monetary incentives is the message it sends. The recipient of the payment may feel that the object must not be worth doing themselves or the government would not pay for it, and if a landowners gets something for nothing, they feel it's not their responsibility to care for it (Irland 1982).

A lower response rate was received to the wildlife plan question that asked farmers to estimate the amount of money they would need to incorporate wildlife habitat on CRP land. Poor response to this question may have been due to the detail, hypothetical nature, and respondent unfamiliarity with what implementing a wildlife plan would involve. Increasing the amount of detail increases the response burden and decrease the probability of the respondent providing the information that is required (Filion 1981). The results of this willingness-to-accept (WTA) question probably are higher than if it were set up as a willingness-to-pay (WTP) situation. Researchers have found that measures of WTA are consistently three-to-five times larger than WTP measures (Cummings et al. 1986). CRP participants may not have a clear understanding of what size of payment would be appropriate for them to follow a wildlife plan, may have been another reason for the lower response rate. Most people, and especially farmers, are loathe to predict a dollar value when they feel that it would be a guess. Most farmers do not sell livestock without calling the buyer and getting a price quotation or finding out last week's bids at the local auction barn.

The notable result from the WTA question is that at least one out of four respondents indicated that they would accept a wildlife plan without any additional monetary payment. These are the CRP participants that wildlife agencies need to target in their habitat improvement programs. Even though monetary payments may not be popular, reduction in the farmers' share of wildlife habitat establishment cost probably would be welcomed. The estimated cost of CRP land wildlife habitat establishment in Virginia is 37% more than that for tree planting (Dicks et al. 1988). Some conservation organizations and state wildlife agencies have programs to help defray the expenses of establishing specialized plantings for wildlife (Hoefer and Bratton 1987).

According to Svoboda (1980), personal and social incentives are more enduring than economic incentives to private landowners. Personal incentives provide a sense of fulfillment and well-being from owning a well-managed property. Social incentives provide community recognition of certain achievements, peer group acceptance, and leadership opportunities. These are the incentives that could be emphasized to influence CRP participants to adopt wildlife options on their retired land.

Integrated wildlife plans developed with landowners' objectives in mind are a start in developing personal incentives. An optional biannual inspection of CRP wildlife practices by wildlife biologists or technicians would help open lines of communication. Community recognition of landowners with outstanding dedication to wildlife on their farms is desirable to focus on social incentives. Presently, Soil and Water Conservation Districts select a farm from each county for a soil conservation award. Farms are judged on land treated to reduce soil loss to acceptable rates, conservation practices accomplished, community service, and general farm appearance. A county wildlife award could be based on habitat criteria including the farm's general appearance, say through the eyes of a bobwhite quail. Conservation professionals, community leaders, and former winners could be the judges for such a contest.

What about wildlife habitat on CRP land after the ten-year contract is expired? Inspected and qualified wildlife habitat on CRP land may be one conservation practice for which the USDA could give farmers long-term extensions. This would provide farmers with an additional incentive to implement wildlife habitat practices by providing an option. Farmers may not want to close the

door on an option that could extend CRP payments for at least a designated portion of their farm. A longer term retirement program such as the purchase of a conservation easements on land with high wildlife potential may also be a possibility.

4.8 *Summary*

The lack of wildlife habitat development on CRP land is due to many reasons. The lack of information and education, negative landowner attitudes toward hunters and higher costs of wildlife cover appear to be important constraints. Even though many state agencies and conservation organizations have implemented programs to enhance CRP wildlife habitat, they should examine how well they have contacted all CRP participants. Many farmers may be “fence sitting” and will not go out of their way to seek information on wildlife habitat. Close contact with a wildlife professional could motivate some farmers to enhance their CRP land for wildlife. With the passage of the 1990 Farm Bill, more farmland probably will be retired (Benbrook 1988). Wildlife and extension agencies must be aggressive in their information and education efforts if the potential for positive impact of long-term land retirement on wildlife is to be realized.

A focus on personal and social incentives to enhance wildlife habitat is needed. Recognition of wildlife habitat achievements on CRP land and entire farms should be initiated by state wildlife agencies in cooperation with federal agricultural agencies. Increased government cost-share to implement wildlife habitat practices and the option to extend contracts on qualified CRP land probably will enhance wildlife on many more acres of retired land.

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Appendix A. Cover of survey questionnaire.

№ 1554

WILDLIFE MANAGEMENT ON CONSERVATION RESERVE PROGRAM LAND:
YOUR VIEW WANTED



The Conservation Reserve Program (CRP) pays the landowner or farm operator a contracted amount to stop cropping highly erodible land for 10 years. This questionnaire is meant to be answered by the person that decides the management of your CRP land. Your answers will be strictly confidential and, your name will not be associated with any responses.

DEPARTMENT OF FISHERIES AND WILDLIFE SCIENCES
SCHOOL OF FORESTRY & WILDLIFE RESOURCES
VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY

Appendix B. Virginia survey with summary results.

Q-1. In general, how has the wildlife abundance on the farm you own or operate changed in the last three years? (check one)

- 3.8% _____ 1. INCREASED GREATLY
29.7 _____ 2. INCREASED SOMEWHAT
37.4 _____ 3. STAYED THE SAME
10.4 _____ 4. DECREASED SOMEWHAT
3.0 _____ 5. DECREASED GREATLY
14.6 _____ 6. I DON'T KNOW
(n=603, 1.2% checked > 1 category)

Q-2. Have you been informed about improving the wildlife habitat on your CRP land?

- 17.0% _____ 1. YES, BY THE ASCS
6.7 _____ 2. YES, BY THE SCS
3.2 _____ 3. YES, BY THE COOPERATIVE EXTENSION SERVICE
2.4 _____ 4. YES, BY A STATE FORESTER
0.8 _____ 5. YES, BY A STATE WILDLIFE BIOLOGIST
1.3 _____ 6. YES, BY _____
21.3 _____ 7. NO, BUT I WISH SOMEONE WOULD
41.2 _____ 8. NO
(n=595, 6.1% checked > 1 category)

Q-3. Do you want to improve the wildlife habitat on your CRP land?

- 72.1% _____ 1. YES
27.9 _____ 2. NO → SKIP TO Q-10 ON PAGE 2
(n=605)

Q-4. Check the reasons why you think it is important to improve the wildlife habitat on your farm. (Check all that apply to you)

- 21.1% _____ 1. HUNTING OPPORTUNITIES FOR MYSELF
5.5 _____ 2. HUNTING OPPORTUNITIES FOR OTHERS
2.5 _____ 3. INCOME FROM LEASE HUNTING
23.2 _____ 4. SEEING WILDLIFE ON MY LAND
11.7 _____ 5. KNOWING WILDLIFE IS PRESENT ON MY LAND
18.2 _____ 6. WILDLIFE VALUES FOR MY CHILDREN IN THE FUTURE
11.7 _____ 7. WILDLIFE HEALTH IS AN INDICATOR OF ENVIRONMENTAL
QUALITY FOR PEOPLE OR LIVESTOCK
4.8 _____ 8. WILDLIFE IS IMPORTANT IN HOLDING DOWN POPULATIONS OF
RODENTS AND INSECTS
1.1 _____ 9. OTHER REASON _____

(n=435, reported percents are for MOST IMPORTANT reason)

Q-5. Of the reasons checked in Q-4, which are most important?
(Put number of reason on appropriate line)

- _____ MOST IMPORTANT
_____ SECOND MOST IMPORTANT

Q-6. For which one type of wildlife would you be most interested in managing your CRP land? (Check only one)

- 16.2% _____ 1. DEER
59.7 _____ 2. GAMEBIRDS
4.3 _____ 3. WATERFOWL
8.7 _____ 4. SONGBIRDS
(n=439, 11.2% checked > 1 category)

Q-7. Have you actively sought out information on improving wildlife habitat on your CRP land?

- 25.6% _____ 1. YES
74.4 _____ 2. NO

(n=437)

Q-8. How have you purposefully managed wildlife habitat on your farm in the past? (Check all that apply)

- 1. PLANTED TREES AND SHRUBS FOR WILDLIFE
- 2. PLANTED FOODPLOTS FOR WILDLIFE
- 3. PLANTED GRASSES OR LEGUMES FOR WILDLIFE COVER
- 4. FENCED POND OR STREAM BANK TO KEEP LIVESTOCK OUT
- 5. STACKED BRUSH PILES TO BENEFIT WILDLIFE
- 6. LEFT TREES STANDING THAT WILDLIFE CAN USE FOR FOOD OR SHELTER
- 7. AVOIDED GRAZING MY WOODS
- 8. LEFT SOME CROPS UNHARVESTED
- 9. AVOIDED MOWING SET-ASIDE ACRES BEFORE AUGUST
- 10. AVOIDED REMOVING BRUSHY RAVINES OR FENCELINES
- 11. OTHER _____
- 12. I HAVE NOT TRIED TO MANAGE WILDLIFE ON MY FARM

(n=443, recorded number of positive behaviors checked by participant: [0]20.8%; [1]12.6%; [2]12.6%; [3]15.3%, [4]12.8%; [5]11.5%; [6]5.6%; [7]5.9%; [8]1.8%; [9]0.9%)

Q-9. Have you spent extra time or money in trying to improve your CRP land for wildlife over and above the minimum requirements of your CRP contract?

- 40.6% 1. YES
 - 59.4 2. NO
- (n=426)

→ SKIP TO Q-12 ON NEXT PAGE

Q-10. If you answered NO to Q-3, check the reasons why you do not want to improve wildlife habitat on your CRP land.

(Check all that apply)

- 43.1% _____ 1. UNWANTED HUNTERS ATTRACTED
- 10.6 _____ 2. CROP DAMAGE FROM WILDLIFE
- 0.6 _____ 3. LIVESTOCK IS ATTACKED OR SCARED BY WILDLIFE
- 0 _____ 4. WILDLIFE CAUSES PROBLEMS AROUND BUILDINGS
- 0 _____ 5. WILDLIFE CARRIES DISEASE
- 0 _____ 6. I DON'T LIKE WILDLIFE
- 3.1 _____ 7. I DON'T WANT TREES ON MY CRP LAND
- 6.3 _____ 8. I DON'T HAVE TIME TO IMPROVE WILDLIFE HABITAT
- 15.6 _____ 9. I DON'T HAVE MONEY TO SPEND ON WILDLIFE HABITAT
- 0 _____ 10. I DON'T KNOW HOW TO IMPROVE WILDLIFE HABITAT
- 0.6 _____ 11. I AM A TENANT AND WILL NOT BENEFIT FROM IMPROVING WILDLIFE HABITAT
- 4.4 _____ 12. I CONTRACT OUT THE FARMING OPERATION AND WILL NOT BENEFIT FROM IMPROVING WILDLIFE HABITAT
- 15.0 _____ 13. OTHER _____

(n=160, reported percents are for MOST IMPORTANT reason)

Q-11. Of the reasons checked in Q-10, which are most important?

(Put number of above reason on appropriate line)

- _____ MOST IMPORTANT
- _____ SECOND MOST IMPORTANT

Q-12. Of the following reasons, please indicate what you like about the CRP. (Check all that apply)

- 54.5% _____ 1. THE DEPENDABLE ANNUAL PER-ACRE INCOME
- 2.2 _____ 2. COST-SHARE FOR PLANTING COVER CROP
- 22.0 _____ 3. EROSION CONTROL BECAUSE OF COVER CROP
- 6.3 _____ 4. ENHANCEMENT OF WILDLIFE HABITAT
- 13.6 _____ 5. ESTABLISHMENT OF TREES FOR FUTURE HARVEST
- 0.3 _____ 6. GETTING READY FOR CROSS-COMPLIANCE
- 0.3 _____ 7. I DON'T LIKE CRP, BUT PARTICIPATE ANYWAY
- 0.7 _____ 8. OTHER _____

(n=583, reported percents are for MOST IMPORTANT reason)

Q-13. Of the reasons checked in Q-12, which is most important to you?

(Put number of reason on appropriate line)

- _____ MOST IMPORTANT
- _____ SECOND MOST IMPORTANT

Q-14. Currently, you get CRP payments and 50% cost-share for planting CRP land to wildlife cover or other approved practices. We are very interested in your response to the following proposal.

Suppose a plan to improve the wildlife habitat on your CRP land were designed for you by a wildlife manager. This plan called for trees, shrubs, and foodplots on your CRP land. If all the costs of putting this plan into action (plants, seed, labor, and equipment) were paid for by a conservation organization, estimate the lowest profit amount you would need to carry out this plan on your CRP land. This amount would be a one-time payment in addition to your current CRP payment, and you would maintain all rights to your land. (Please check one)

- | | | | | | |
|-------|-------|--------------------------|--|---|--|
| 27.1% | _____ | 0 * | | | |
| 2.2 | _____ | \$5 PER ACRE OF CRP LAND | | | } → SKIP TO Q-16 |
| 4.1 | _____ | \$10 | " | " | |
| 1.4 | _____ | \$15 | " | " | |
| 4.3 | _____ | \$20 | " | " | |
| 6.1 | _____ | \$25 | " | " | |
| 3.3 | _____ | \$30 | " | " | |
| 1.4 | _____ | \$35 | " | " | |
| 5.1 | _____ | \$40 | " | " | |
| 12.2 | _____ | \$45 | " | " | |
| 4.5 | _____ | OTHER \$_____ | ([17] \$50; [2] \$60; [2] \$75; [2] \$100) | | |
| 28.2 | _____ | NOT INTERESTED | | | |
- (n=510)

* If you chose zero please answer Q-15.
If you chose a response other than zero, go to Q-16.

Q-15. If you checked zero in Q-14, please choose the best reason for your answer. (Check one reason)

- (n=98) _____ 1. I WOULD WELCOME THIS WILDLIFE HABITAT IMPROVEMENT PROGRAM AND WOULD NOT REQUIRE ADDITIONAL PAYMENT.
2. I WOULD BE WILLING TO SPEND THIS AMOUNT OF MY OWN MONEY TO IMPROVE THE WILDLIFE HABITAT ON MY CRP LAND.
- | | | | | |
|--------|-------|--------------------------|---|---|
| (n=11) | _____ | \$5 PER ACRE OF CRP LAND | | |
| (n=5) | _____ | \$10 | " | " |
| (n=2) | _____ | \$15 | " | " |
| (n=1) | _____ | \$20 | " | " |
| (n=2) | _____ | \$25 | " | " |
| | _____ | OTHER \$_____ | | |

Q-16. Did you hay any of your CRP land in 1988 as part of the drought relief program?

- 1.2% _____ 1. YES → SKIP TO Q-18
98.8 _____ 2. NO
(n=574)

Q-17. If you answered NO to Q-16, what one reason was most important in keeping you from haying your CRP land in 1988? (Check only one reason)

- 3.0% _____ 1. THE 25% ANNUAL RENTAL COST WAS TOO MUCH
36.0 _____ 2. TREES WERE PLANTED ON MY CRP LAND
6.4 _____ 3. NOT ENOUGH CRP LAND TO BOTHER WITH
8.7 _____ 4. FORAGE QUALITY WAS TOO LOW TO BOTHER WITH
9.1 _____ 5. WANTED TO PRESERVE WILDLIFE HABITAT
12.5 _____ 6. WANTED TO PROTECT THE NEW SEEDING
18.9 _____ 7. OTHER (please specify) _____
(n=530, 5.5% checked > 1 category)

Q-18. Which one method do you use most often to control weeds on your CRP land? (Check only one)

- 0.2% _____ 1. DUE TO THE DROUGHT, I USED MY CRP LAND FOR HAY
20.3 _____ 2. MOW OR CLIP THE ENTIRE CRP ACREAGE PRIOR TO AUGUST
22.9 _____ 3. MOW OR CLIP THE ENTIRE CRP ACREAGE AFTER AUGUST
6.7 _____ 4. MOW OR CLIP ONLY THE PATCHES OF WEEDS WITHIN THE CRP ACRES
0.9 _____ 5. SPRAY THE ENTIRE CRP ACREAGE WITH HERBICIDE
2.0 _____ 6. SPOT SPRAY THE PROBLEM AREAS WITH HERBICIDE
20.4 _____ 7. DO NOT HAVE A PROBLEM WITH WEEDS
17.7 _____ 8. WEEDS ARE A PROBLEM, BUT I HAVEN'T ATTEMPTED TO CONTROL THEM AS OF YET.
(n=538, 8.9% checked > 1 category)

Q-19. Is your farm posted to prevent hunters from trespassing?

- 63.3% _____ 1. YES
36.7 _____ 2. NO
(n=588)

Q-20. CRP land can be leased for recreational purposes to generate additional income for the owner (or operator). How much of your CRP land is leased to hunters or hunt clubs?

- 92.8% _____ 1. NONE
0.3 _____ 2. 25 PERCENT
0.3 _____ 3. 50 PERCENT
0.3 _____ 4. 75 PERCENT
6.2 _____ 5. ALL
(n=601) → SKIP TO Q-22

Q-21. If you checked NONE in Q-20, which one reason is most important in keeping you from leasing your CRP land for hunting?
(Check only one)

- 1.9% _____ 1. I DON'T LIKE HUNTING
- 7.4 _____ 2. I DON'T WANT HUNTERS ON MY FARM
- 10.2 _____ 3. I HUNT MYSELF AND DON'T WANT OTHER HUNTERS TAKING MY GAME
- 12.9 _____ 4. I AM CONCERNED ABOUT HUNTING ACCIDENTS AND PERSONAL LIABILITY
- 19.3 _____ 5. I DON'T HAVE ENOUGH HABITAT TO MAKE LEASING WORTHWHILE
- 3.0 _____ 6. I DON'T HAVE THE TIME TO SPEND ON COORDINATING LEASE HUNTING ARRANGEMENTS
- 11.0 _____ 7. I PREFER MY PRIVACY
- 19.1 _____ 8. OTHER _____

(n=529, 15.3% checked > 1 category)

Q-22. At what price would you (or do you) lease your CRP land by contract to a hunter or hunt club?

- 10.2% _____ 1. I WOULD CHARGE \$_____ PER ACRE EACH YEAR
(estimate dollar amount)
(\bar{X} =\$14.93, se=\$3.05, n=51)
- 4.0 _____ 2. I CURRENTLY CHARGE \$_____ PER ACRE EACH YEAR
(fill in dollar amount)
(\bar{X} =\$1.33, se=\$0.37, n=20)
- 37.6 _____ 3. I WOULD NOT CHARGE FOR HUNTING, THEY CAN HUNT FOR FREE
- 48.2 _____ 4. I WOULD NOT ALLOW HUNTERS ON MY CRP LAND, EVEN IF THEY OFFERED TO PAY

(n=500)

Q-23. How much would you (or do you) charge one person to hunt on your CRP land for one visit?

- 6.9% _____ 1. I WOULD CHARGE EACH PERSON \$_____ PER VISIT TO HUNT ON MY CRP LAND (estimate dollar amount)
(\bar{X} =\$27.97, se=\$5.51, n=34)
- 1.2 _____ 2. I CURRENTLY CHARGE EACH PERSON \$_____ PER VISIT TO HUNT ON MY CRP LAND (fill in dollar amount)
(\bar{X} =\$2.00, se=\$2.00, n=5)
- 49.5 _____ 3. THERE WOULD BE NO CHARGE, THE PERSON COULD HUNT FOR FREE
- 42.5 _____ 4. I WOULD NOT ALLOW ANYONE TO HUNT, EVEN IF THE HUNTER OFFERED TO PAY

(n=494)

- Q-24. To allow public access to your CRP land for hunting, you would need what additional amount in your annual CRP rental payment?
- 5.4% _____ 1. \$_____ PER ACRE EACH YEAR (estimate dollar amount)
 (X=\$33.53, se=\$6.08, n=28)
- 12.0 _____ 2. I WOULD NOT REQUIRE ANY ADDITIONAL PAYMENT
- 82.6 _____ 3. I WOULD NOT CONSIDER ALLOWING PUBLIC ACCESS TO MY CRP LAND FOR HUNTING
- (n=588)

These last questions are about you and the farm you own or operate. Your answers are needed to interpret the results of this study.

- Q-25. How many total acres are in your farming operation (cropped, pasture, fallow, idle, and trees)?
 _____ ACRES (X=323.94, se=23.35, n=568)
- Q-26. How many acres of your operation are in the following CRP conservation practices?
- _____ acres CP-1. ESTABLISHMENT OF PERMANENT INTRODUCED GRASSES
 (X=33.6, se=2.78, n=260)
- _____ acres CP-2. ESTABLISHMENT OF PERMANENT NATIVE GRASSES
 (X=26.5, se=6.47, n=23)
- _____ acres CP-3. TREE PLANTING
 (X=35.2, se=3.00, n=293)
- _____ acres CP-4. PERMANENT WILDLIFE HABITAT
 (X=30.8, se=7.13, n=44)
- _____ acres CP-5. FIELD WINDBREAKS
 (X=5.5, se=0.96, n=6)
- _____ acres CP-6. DIVERSION (low ridges to divert surface water)
 (X=5.3, se=1.80, n=7)
- _____ acres CP-7. EROSION CONTROL STRUCTURE
 (X=12.8, se=3.92, n=26)
- _____ acres CP-8. GRASS WATERWAYS
 (X=4.9, se=0.69, n=42)
- _____ acres CP-9. SHALLOW WATER AREAS FOR WILDLIFE
 (X=5.1, se=1.50, n=13)
- _____ acres CP-10. VEGETATIVE COVER -GRASS- ALREADY ESTABLISHED
 (X=39.2, se=6.90, n=51)
- _____ acres CP-11. VEGETATIVE COVER -TREES- ALREADY ESTABLISHED
 (X=54.2, se=11.39, n=31)
- _____ acres CP-12. WILDLIFE FOOD PLOTS
 (X=7.3, se=2.40, n=21)
- _____ acres CP-13. VEGETATIVE FILTER STRIPS
 (X=24.4, se=18.0, n=8)
- _____ I DON'T KNOW

Q-27. What did you plant on your CRP land?
(For example: white pine/11 acres K-31 fescue/9 acres)

Q-28. Do you have more eligible land that you could put into the CRP?
28.7% _____ 1. YES _____ ACRES (fill in number of acres if known)
(\bar{X} =40.7, se=5.29, n=113)
53.1 _____ 2. NO
18.2 _____ 3. I DON'T KNOW
(n=588)

Q-29. Are you the owner or operator of the farm with CRP land?
81.6% _____ 1. OWNER
5.3 _____ 2. OPERATOR (do not own)
13.1 _____ 3. BOTH APPLY (I am the owner of some, and the operator of
(n=604) other CRP land)

Q-30. How many years have you owned (or managed) farmland?
10.3% _____ 1. 5 YEARS OR LESS
10.8 _____ 2. 6 TO 9 YEARS
21.3 _____ 3. 10 TO 20 YEARS
57.5 _____ 4. 20 YEARS OR MORE
(n=600)

Q-31. What type of farm do you own or operate?
8.8% _____ 1. LIVESTOCK FARM
49.1 _____ 2. CROP FARM
26.9 _____ 3. ALL OF FARM IN CRP
(n=588, 15.1% checked > 1 category)

Q-32. What portion of your income is from farming?
12.4% _____ 1. ALL OR NEARLY ALL OF IT
1.7 _____ 2. ABOUT 3/4
8.0 _____ 3. ABOUT 1/2
12.4 _____ 4. ABOUT 1/4
65.6 _____ 5. LESS THAN 1/4
(n=590)

Q-33. How far do you live from your CRP land?
57.5% _____ 1. I LIVE ON THE SAME FARM
42.5 _____ 2. I LIVE _____ MILES FROM MY CRP LAND (fill in number)
(1-20 miles, 28.1%; >20, 14.4%)
(n=609)

Q-34. What is your level of education? (Please circle the number)

ELEMENTARY SCHOOL								HIGH SCHOOL				COLLEGE				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17+
(n=602)				8.6%				9.8%		38%		19.8%			23.8%	

Q-35. What is your sex?

75.0% _____ 1. MALE
25.0 _____ 2. FEMALE
(n=613)

Q-36. What is your age?

_____ YEARS
(\bar{X} =59.5, se=0.558, n=599)

OTHER COMMENTS OR SUGGESTIONS: _____

THANK YOU FOR YOUR COOPERATION

Appendix C. Cover letter for first mailing.

VIRGINIA TECH
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

1 November 1988

Joseph M. Whitehead
P.O. Box G
Chatham, VA 24531

Dear Mr. Whitehead:

Our records show that you are one of the Virginia farm owners or operators who have enrolled in the Conservation Reserve Program (CRP). Your participation in the CRP makes your views important in understanding how this program is affecting farm wildlife. Your views are of interest to personnel in wildlife agencies, the Extension Service, and the United States Department of Agriculture who would like to improve the CRP to provide more wildlife habitat.

The purpose of the attached questionnaire is to find out how you are managing your CRP land, what would encourage you to improve wildlife habitat on those acres, and how you would feel about providing access to this land for recreation. If you do not personally decide how your CRP land is managed, please fill out and return the yellow sheet. This will ensure that the proper individual answers the questionnaire.

I recognize that your time is valuable. So, in appreciation for returning this completed questionnaire, you will be eligible to win a Solo 425 backpack sprayer (\$119 value) donated by Forestry Suppliers Inc. Your name will be put into a drawing when you return this questionnaire in the enclosed stamped envelope. The prize winner will be notified on December 15, 1988, and the prize will be mailed out soon thereafter.

Please be assured all responses will remain confidential. If you have any questions, feel free to contact me at (703) 961-5087.

Sincerely yours,

Peter T. Bromley
Extension Specialist, Wildlife

Appendix D. Request for manager information.

NO 1154

WILDLIFE MANAGEMENT ON CONSERVATION RESERVE PROGRAM (CRP) LAND:

YOUR VIEW WANTED

The Conservation Reserve Program (CRP) pays the landowner or farm operator a contracted amount to stop cropping erodible land for 10 years. Our records indicate that you are participating in the CRP. If you are not in the CRP, please let us know so our records can be corrected (simply return this page in the enclosed envelope and check the line below).

_____ I am not in the Conservation Reserve Program

If you are in the CRP, please answer the following question before proceeding with the rest of the questionnaire.

ARE YOU THE INDIVIDUAL THAT DECIDES THE CARE AND MAINTENANCE OF YOUR CONSERVATION RESERVE PROGRAM LAND?

NO _____ If no, please fill in the name and mailing address of the individual that is in charge of managing your CRP land and return this page in the enclosed envelope.
DO NOT COMPLETE THE ENCLOSED SURVEY

Name _____

Address _____

YES _____ If yes, please answer the attached survey on CRP land management. Your response is crucial in making this a valid study. To reflect our appreciation for your time in answering this survey, your completed response will automatically place your name in a drawing to win a Solo 425 backpack sprayer donated by Forestry Suppliers, Inc. (valued at \$119). The drawing for the backpack sprayer will be held on December 15, 1988.
PLEASE PROCEED TO ANSWER THE QUESTIONNAIRE

Thank you for your help. Your answers will be strictly confidential. Your name will not be associated with any questionnaire responses.

Appendix E. Post card mailed one week after first mailing.

Last week a questionnaire seeking your views about wildlife management on Conservation Reserve Program (CRP) land was mailed to you.

If you have already completed and returned it to us, please accept our sincere thanks. If not, please do so today. Your response is needed to determine the importance of wildlife management on CRP land.

If by some chance you did not receive the questionnaire, or it got misplaced, please call me right now, collect (703) 961-6944 and I will get another one in the mail to you today.

Sincerely,

Peter T. Bromley
Extension Specialist, Wildlife
Virginia Tech
Blacksburg, VA 24061

Appendix F. Cover letter for second mailing.



22 November 1988

Joseph M. Whitehead
P.O. Box G
Chatham, VA 24531

Dear Mr. Whitehead:

About three weeks ago I wrote to you seeking your opinion on the Conservation Reserve Program (CRP) and its potential to improve wildlife habitat. As of today we have not yet received your completed questionnaire. Another copy of the questionnaire is enclosed. It will ask how you are managing your CRP land, what would encourage you to improve wildlife habitat on those acres, and how you would feel about providing access to this land for recreation to gain extra income.

Even if you have no interest in wildlife, live far away, or are physically unable to work on this land, your opinion is still important in getting a broad picture of how you regard wildlife and your CRP land.

I recognize that your time is valuable. So, in appreciation for returning this completed questionnaire, you will be eligible to win a Solo 425 backpack sprayer (\$119 value) donated by Forestry Suppliers Inc. Your name will be put into a drawing when you return this questionnaire in the enclosed stamped envelope. The prize winner will be notified on December 15, 1988, and the prize will be mailed out soon thereafter.

If you do not personally decide how your CRP land is managed, please give this to the person that does or write their address on the questionnaire and return. Please be assured all responses will remain confidential. Your cooperation is greatly appreciated.

Sincerely yours,

Peter T. Bromley
Extension Specialist, Wildlife

Appendix G. Cover letter for third mailing.

VIRGINIA TECH
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

8 December 1988

Joseph M. Whitehead
P.O. Box G
Chatham, VA 24531

Dear Mr. Whitehead:

In an effort to urge you to answer my questionnaire regarding farm wildlife, I am requesting your help again. I assure you this is the last time I will ask. If you have already sent your questionnaire, please disregard this request.

Because you have land in the Conservation Reserve Program (CRP), your answers can help influence agricultural policy concerning wildlife on farmland. Your views are important because I feel you may have a different opinion than someone who answered this questionnaire right away.

By sending in the completed questionnaire soon, I'll be able to put your name in the drawing for a Solo backpack sprayer (\$119 value). The prize winner will be notified on the 30th of December.

If you are not in the CRP, let me know by writing a note on the form and returning it. If someone other than you manages this land, please pass this letter on to that person.

Your help will be greatly appreciated, and your name will not be associated with your responses.

Sincerely yours,

Peter T. Bromley
Extension Specialist, Wildlife

Appendix H. Written comments on questionnaire.

PROBLEMS WITH HUNTERS

People are destructive, they drive their pick-up trucks on farm roads and tear them up. I don't want strange people on my farm.

I am a widow and live here alone and hunters go over my land and don't ask if they can hunt or not.

This farm is posted, but locals tear the signs down as fast as I put them up!

If you let hunters use your land they run their car or truck over the field and ruin them when plowing they have no respect for you or your land.

Farm is posted - but that don't stop them, they cut fence or cable across roads.

I have been around hunters all of my life and most of them are a bunch of slobs. They will shoot everything that moves, birds, songbirds, squirrel nest, illegal deer whatever and then go out and bellyache about their ain't no game and they get by with it. When a landowner comes along and asks them to get off his property they get mad and curse and abuse him and make threats. About 1/2 of all hunters I see are drinking and no one will do anything about that. I did let people hunt 15-20 years ago and I was so abused by them that I had to stop all from hunting. I try to be a fair person and would welcome good clean, decent, God-fearing people to come and hunt with me.

I enjoy my wild friends and don't care for hunters killing them.

The deer hunters with dogs & two-way radios have very little respect for others land.

You can't keep deer hunters off of your land--no respect for landowner.

Farm is posted but doesn't help, hunters tear down sign.

Land is posted, hunters cause damage to fences, scare sheep and steal anything they can carry off. Hunters trespass damage property & steal, dogs disturb sheep. My land is posted with dozens of

signs that do no good. . . Personal property rights and freedom to privacy and peace invaded daily by truckloads of hunters who lack consideration.

I do not dislike hunters - It's those that come in - don't ask if they can hunt. Shoot too close to the houses and will kill anything they see. Also will run their trucks over the land when too wet.

The reason I don't want hunters is they run pickups back and forth so much in winter they tear the road up too much. What little game there is, I want my nephews to have something to hunt. They live less than 1/2 mile from farm. Hunters are always sneaking in and hunting before I get down there so we just got tired of them. They still sneak in with a lot of no trespassing signs.

I don't mind wildlife on my farm, but don't want them killed and people walking and riding on my farm. You never know what they will do. Only a few I trust.

I would not allow just any hunter to hunt.

PROBLEMS WITH WILDLIFE

It concerns me to see the quail population declining and the damn deer population increasing and would like some information on what I may do to enhance their habitat as my pines grow and choke out native weeds and other vegetation they feed on.

In regards to the wildlife I am disgusted. I try to have a garden but the ratcoons (*sic*), opossums, ground hog, deer, crows, blackbirds destroy (*sic*) my garden and the foxes kill my hens. I do not have any hunting on my land.

There are too many deer in my area. There should be a way to control the population.

PROBLEMS WITH MANAGING CRP FOR WILDLIFE

Where the young pines are in heavy lespedeza, I have two problems. One is, I think, the cover makes too much undergrowth and is too thick on the land and not enough opening, and another is that the wild millet strongly competes against the wildlife strips, making it difficult to get high production.

I'm withdrawing from the CRP because of the kind of standardized bureaucratic approach to wildlife management symbolized by this survey. I can do a better job of enhancing wildlife and good farming practices than the government can. . . I would have liked the dependable annual per-acre income, but the incredible red tape isn't worth it. . . I do not . Too much stupid paperwork. Too many stupid questions. Now a stupid survey . . . I've spent a hell of a lot more than \$25 per acre this year on improving wildlife habitat. I thought at first Uncle Sam would help. But Uncle is clearly more concerned with form than substance . . . This is the kind of question that caused me to withdraw from CRP. Just what the hell are "weeds" to wildlife?! The program's rigid and very limited list of approved wildlife plantings helped drive me away.

I placed my land in the CRP Program with the understanding from the ASCS office that the property would be utilized to enhance erosion control, wildlife habitat, and stop cropping for a period of ten years. The following was required and has been accomplished and approved by the administrators of the Conservation Reserve Program (CRP): 1. I was instructed to sow and have sown a mixture of K-31 Fescue and Ladino Clover, including lime and fertilizer. 2. I was instructed to mow (bush hog) the land biannually. In conjunction with my interest in the CRP program, I attended a seminar on small game sponsored by the Virginia Department of Game and Inland Fisheries, Richmond, VA, February, 1988, and learned the following: 1. The most detrimental ground cover for game birds is fescue, containing virtually no food supply or nesting habitat. 2. The number one enemy of nesting game birds is the mower (bush hog) which destroys nests, food supplies, and cover. Since mowed fescue provides no year-round food supply for large or small

game, I feel that my land would be more effectively utilized for this purpose if planted in unharvested volunteer "seed type" crops with controlled mowing.

I do know that George has been very upset with the requirements of putting in certain seeds and lime by specific dates - - and this actually meant disturbing the quail and other wildlife nesting in the areas we put aside for CRP. The bureaucrats have no idea how wildlife does not exist around schedules. George did not put in the lime or whatever, therefore he forfeited all our CRP payments and the wildlife did and does flourish. The CRP set asides flourish also, but not according to their planting schedules.

CRP program is a good program but lets by careful and not spend money unnecessarily on wildlife program. An owner/manager should be willing to better manage wildlife on his property w/o making a financial profit and increasing our deficit.

I will not set aside anymore acreage to CRP because the problems involved in preparation for and seeding are prohibitive since I must rely on other people to get the job done.

We should eliminate fescue, do more prescribed burning, disking plant more lespedeza, milo, soybeans, millet.

Some of the requirements of the CRP program in Campbell County tend to defeat its announced purpose. For example, liming fertilizing and planting orchard grass in a field along with lespedeza only produces a cover to thick no quail can get through it. Then when we bushhog this field, as allowed, the mat of material buildup on the ground only compounds this problem. I would like to see the requirements of the CRP program amended to allow us to burn some of these fields every second or third year (on an alternating basis). This would provide heavy, high cover on part of our acreage and younger more open cover on the rest. But in both cases the ground would be open enough so quail could find and use the seeds we are trying to provide. We would be more than willing to re-seed lespedeza at our own expense after burning should that be necessary, but past experience has shown that after burning the natural weeds and re-seeding from other fields provide food and cover for quail more attractive than the CRP fields we now have.

I am not interested in this program at this time. I don't see where there has been any good in the past. We have fewer rabbits every year. This land has been planted in pines.

I have sold my tractor and equipment. Retired. I'm 66 years old and don't have the money to carry this out. Put farm in pine trees.

In order to have wildlife management it would have to be a profitable enterprise. The government would have to increase the amount of the annual payment made for this land. This would involve work, time and money in order to be successfully carried out but it would definitely increase wildlife which is important.

Yes, why all the questions, we cannot use CRP land anyway.

All of my open land is planted in pines and permanent grass and there is no way that I can do anything. This is a 10 year program.

PROBLEMS WITH CRP ADMINISTRATION

The government and state should not put programs in effect until they have the forms to sign.

The CRP program is managed locally by the county ASCS is a disgrace to farmers.

CRP land at \$50.00 per acre was poor investment.

The CRP program is an administrative nightmare. For the amount of money received it is not worth the paperwork effort. TOO MUCH RED TAPE! Too many bureaucrats involved. Too many forms. Too many questions. Too many restrictions. Too much legal gobbledeygook! . . . Who needs all the aggravation?

MORE HELP WANTED

There should be a publication furnished or mailed to owners about additional information to improve CRP land.

I would appreciate any suggestions or help in improving wildlife habitat. I would allow a limited amount of hunters on my land without charge.

Please send some info. about managing wildlife we have and to increase it.

The wildlife habitat option was not offered by any official agency, and I feel it should have been.

CRP plans and options available to me were poorly understood and explained by the government representatives . . . I think more information on CRP (ie. brochures) needs to be available to ASCS and SCS personnel so they can more actively promote and entertain questions from farmers and landowners on CRP.

I would like to talk to wildlife expert about my farm.

I would like more information on wildlife and woodland conservation and improvement.

I would like to talk to someone about this before Feb. 89 - Thank you for this questionnaire. I hope everyone shows interest in it.

I would welcome this program and I would be pleased to have a wildlife manager and other experts to help plan and execute the needed improvements. . . I would be interested in it being for quail, rabbit, turkey, squirrels, and a variety of other birds. Also, I would be interested in making improvements on all my land. Please give me more information and keep me informed about any developments in the program.

Would like to put in wildlife habitat with some help.

Sold cows, want more wildlife, especially quail & turkey. Because my farm was mostly in pasture, I have been limited on wildlife plots because of the sodbuster rule. I am planting all they will allow me. I would like to plant more and I can protect my land from erosion. I am seeking help for management from the Game Commission. There is also confusion among ASCS personnel and others about what can and cannot be done on CRP land.

Wildlife plots/CRP practices are not fully appreciated by ASCS etc; they have a full plate with farm plan compliance. Somebody with a wildlife mission needs to get the 'word out'.

Would like to talk about wildlife management. Please send help.

Would be glad to talk to someone on ways I can improve wildlife.

Could use special help in wildlife habitat on most acres of this farm - 90 acres pasture growing wild.

LEASING CRP LAND FOR HUNTING

I am concerned with city hunters taking over by lease without any opportunity for locals to hunt land they have traditionally hunted!!

Wildlife enhancement would be most welcome to lease my land for taxes.

I allow hunting by permit only, and do not charge for the permits.

Small conservation minded hunt clubs provide farmers and landowners with responsible hunters who often give assistance in exchange for hunting privileges.

Would like to turn the farm into a hunting preserve if it makes enough income after putting it all into CRP.

I do not know the amount (to charge) per acre.

I lease out my CRP land to local friends for free to watch out for my land.

I intend to establish a licensed shooting preserve for gamebirds.

I would consider allowing hunting if the income was worth it and there was no liability.

I am not familiar with the amount of return I would receive.

I need an agency to find me someone willing to lease my land.

I allow only friends and family to hunt.

I retain hunting rights for myself and friends so I do want to control the rights closely, but do not want to charge friends/ neighbors for hunting--only have 87 acres total.

POSITIVE COMMENTS ON CRP WILDLIFE POTENTIAL

This sounds like a great program, but I am unable to participate as I cannot do the work myself and have no outside help.

I feel CRP is a good program for unused farm land. I would rather have pine trees planted on unused land than letting it grow up in unwanted weeds and trees.

I would like to see payments made to owner/operators to plant wildlife patches on land for deer, turkey and quail. I would also encourage continuing/renewing program when it expires.

I would be interested in wildlife crops on rest of land but will not consider planting open land to trees.

I am interested but my age prevent my doing the work.

I am pleased that land can or may benefit wildlife as well as stop erosion or it may be allowed to do that.

I would be happy to have wildlife management on my land providing there is no additional cost to me.

I would welcome an improvement if there were no costs involved and if I were reimbursed for the timber which otherwise would have been planted. This applies also to land not in the CRP where I intend to plant trees.

I just want to make it clear that I am very interested in wildlife but do not have the time to carry out special management practices for wildlife at this time.

OTHER COMMENTS

There is one field of kudzu that is killing the pines planted there. We need to find some way of killing the kudzu. We are open to suggestions on this.

I have planted food plots for quail & welcome all wildlife on my farm but have a lot of trouble with neighbors dogs killing small game & gamebirds. I wish something could be done about this.

Would like to see CRP eligible on land that was not in Row Crops 1981-85 for wildlife mgmt.

The reason I have checked not interested is my age and I have only a limited amount of acres left for the crops.

I love my wildlife and I feed deer in my backyard. I know this is wrong.

I love the wildlife. I would like to fence the farm in and let only family members hunt with cameras, or to thin out the herds of deer and such for their own good.

(Planted) what they told me to plant.

I want to plant field edges in something for quail and turkeys. I have a lot of deer and continue to plant food plots for them.

Many deer and wild turkey on property now. Turkeys have replaced quail on land - Quail apparently will not stay on same land with wild turkey.

I sowed clover for honeybee's pasture - I have 250 hives of honeybees.

We are no longer able to actively work a farm, but always worried about the erosion of soil, so we were happy to put all open land in CRP and also to receive the payments, which we need.

I am 76 years old, anything you want to do at your expense is fine with me.

Would like to know your conclusions from this survey.

I would like this (wildlife plan). I do not know the lowest estimate to do this, but I would accept the lowest. I may even share in the cost.

I kept 5 acres out of CRP in order to plant food strip without restrictions (e.g. 1988--first year in sunflowers. Don't have waterfowl habitat-could create; would like to. Would buy more land for wildlife if possible.

We usually clip (CRP land) 2 times a year in order to keep it looking good.

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