

LANDOWNER PARTICIPATION
IN THE WETLANDS RESERVE PROGRAM:
EVIDENCE FROM NINE OKLAHOMA COUNTIES

By

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CHAPTER I

INTRODUCTION

Section 1.1: Description of the Wetlands Reserve Program

The Wetlands Reserve Program (WRP) is a federal wetlands conservation program administered by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS). Under this program, the federal government acquires most development and agricultural rights to private wetlands that have been drained for cultivation or otherwise altered in a manner impairing the natural hydrology (NRCS 2007). Enrolled areas are restored to wetland function under a plan developed by the NRCS, the landowners, and cooperating agencies and organizations (e.g. Ducks Unlimited). The landowner retains ownership of the site, but the easement usually prevents him or her from cultivating crops, from grazing livestock, or from building permanent structures (NRCS 2007). Such activities must be approved by the NRCS and are permissible only when fully compatible with natural wetland function. Access to the land for recreational purposes such as duck hunting or for mineral extraction is generally not affected by the easement. In Oklahoma, implementation of the program, including the development of restoration plans, is coordinated with the U.S. Fish and Wildlife Service (USFWS), the Oklahoma Department of Wildlife Conservation, and the NGO Ducks Unlimited (Stephen Tully, personal communication).

Land may be enrolled in the WRP under a permanent easement, a 30-year easement, or 10-year cost-sharing agreement (NRCS 2007). The easement payment and the government contribution to restoration costs vary directly with the length of the contract. For a permanent easement, the government pays the landowner 100% of the assessed value of the easement and is responsible

for 100% of the restoration costs. For a 30-year easement, the government pays 75% of the assessed easement value and 75% of the restoration costs. For a 10-year cost-share, the government pays 75% of restoration costs, and no easement is placed upon the property.

Section 1.2: Incentive-Based Mechanisms

Because it operates through providing incentives for the voluntary behavior of private landowners, the WRP belongs to a class of conservation programs known as incentive-based mechanisms (IBMs) (Diagne 1996). These programs use policies such as cost sharing, incentive payments, and the purchase of a partial interest in private land (i.e., easements) to motivate landowners to conserve natural resources. IBMs have played a part in the management of wetlands for more than half a century (Wiebe et al. 1995). For example, in 1958 the USFWS's Small Wetlands Acquisition Program inaugurated the use of conservation easements to protect wetlands in the Prairie Pothole region of the northern Great Plains. Since the 1980s, the importance of IBMs, especially those relying on positive incentives, has increased markedly because of controversy surrounding the regulatory approach exemplified by the Clean Water Act's Section 404 and because of doubts about the effectiveness of programs such as Swampbuster (Cary et al. 1990; Heimlich et al. 1989; Wiebe et al. 1995; Zinn and Copeland 2002).

The movement towards positive IBMs is clearly evident in the evolution of wetlands conservation policy, but the trend has also extended well beyond wetlands to encompass many different natural resources. Over the past quarter century, the USDA has seen the creation of a multitude of programs, including the Conservation Reserve Program (CRP) in 1985; the Wetland Reserve Program (WRP) and Water Quality Incentive Program (WQIP) in 1990; the Environmental Quality Incentive Program (EQIP), Wildlife Habitat Incentive Program (WHIP), and Farm and Ranch Land Protection Program (FRPP) in 1996; and the Conservation Security Program (CSP) and Grassland Reserve Program (GRP) in 2002 (USDA 2006). In the 2008 Farm Bill (i.e., Farm, Conservation, and Energy Act of 2008), Congress added yet another program to the USDA's portfolio with the creation of the Wetlands Reserve Enhancement Program (WREP) (NRCS 2008a). IBMs were also created at other federal agencies during the same general time period. For example, in 1987 the Partners for Fish and Wildlife Program (PFWP) was established at the

USFWS. Across the Atlantic, the European Union has followed the U.S. lead and developed its own IBMs such as the Environmentally Sensitive Areas (ESA) program (Burton 2004). Although each of these programs targets a different natural resource, all of them forego regulation or punitive disincentives in favor of positive inducements for private landowners to conserve.

Section 1.3: Enrollment in the WRP

As judged by the number of landowners participating and the number of acres enrolled, the WRP has met with considerable success (see Figure 1.1). Participation was robust for much of the lifetime of the program, with the number of acres enrolled each year meeting the yearly cap from the program's inception until 2002 (Copeland and Zinn 2008; Zinn and Copeland 2002). Because of this success, the cumulative cap on enrollment was raised several times to allow for greater overall participation.

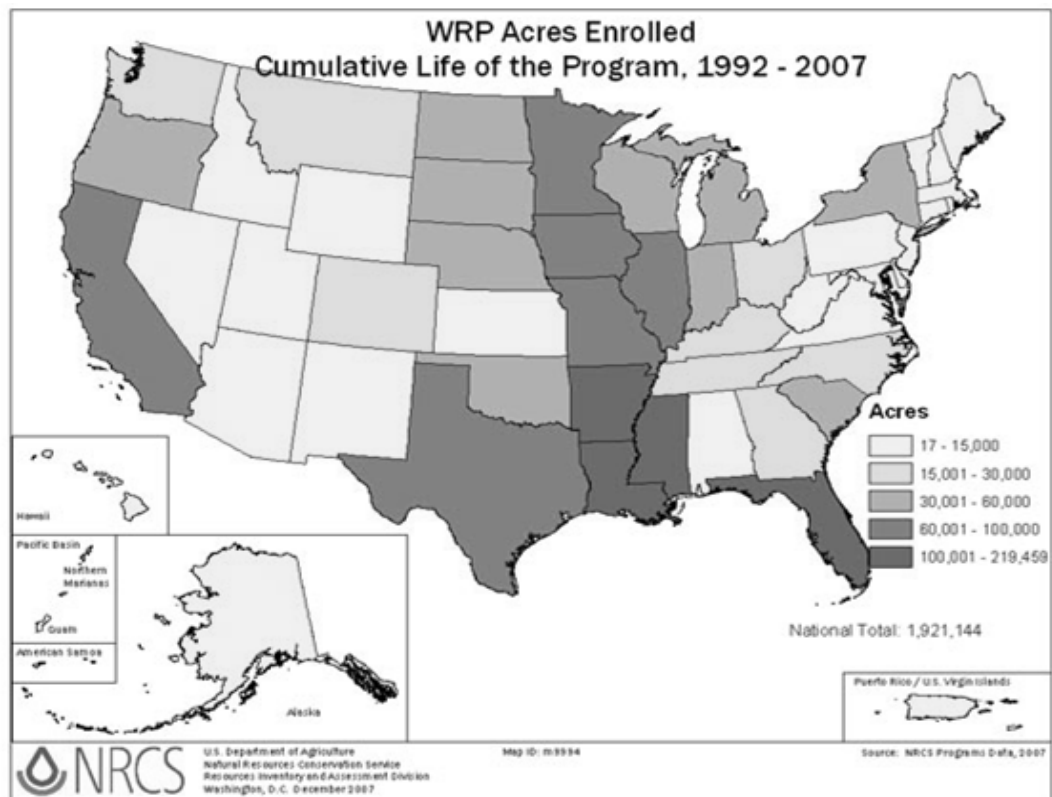


Figure 1.1. Number of acres enrolled in the Wetland Reserve Program in the United States through FY 2007. Retrieved Nov. 2008 (<http://www.nrcs.usda.gov/programs/wrp/>).

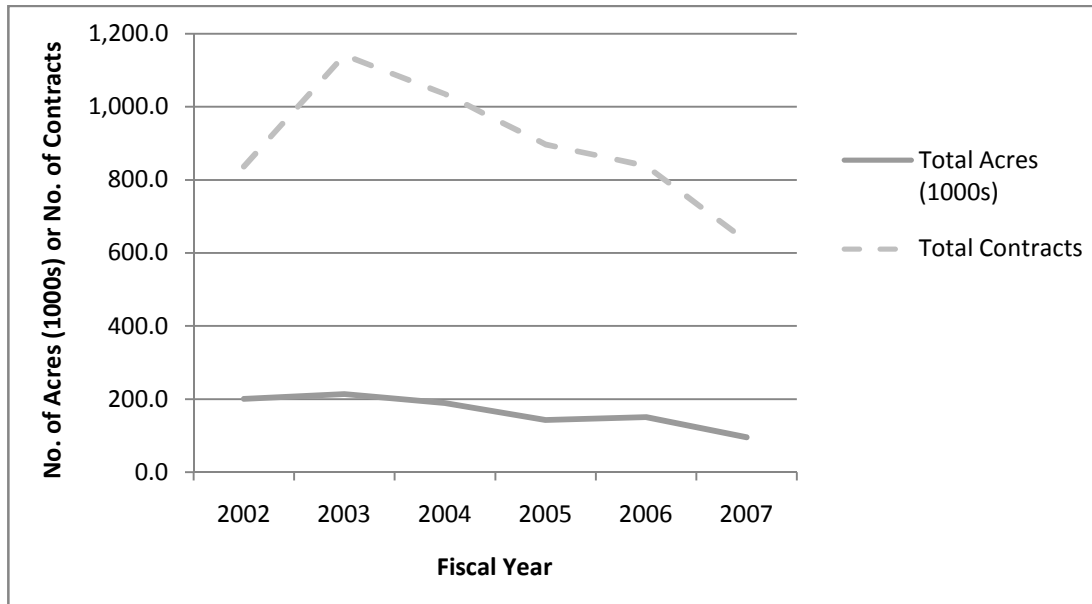


Figure 1.2. Annual number of WRP contracts signed and WRP acres enrolled nationwide for FY2002 through FY2007 (NRCS N.d.-a).

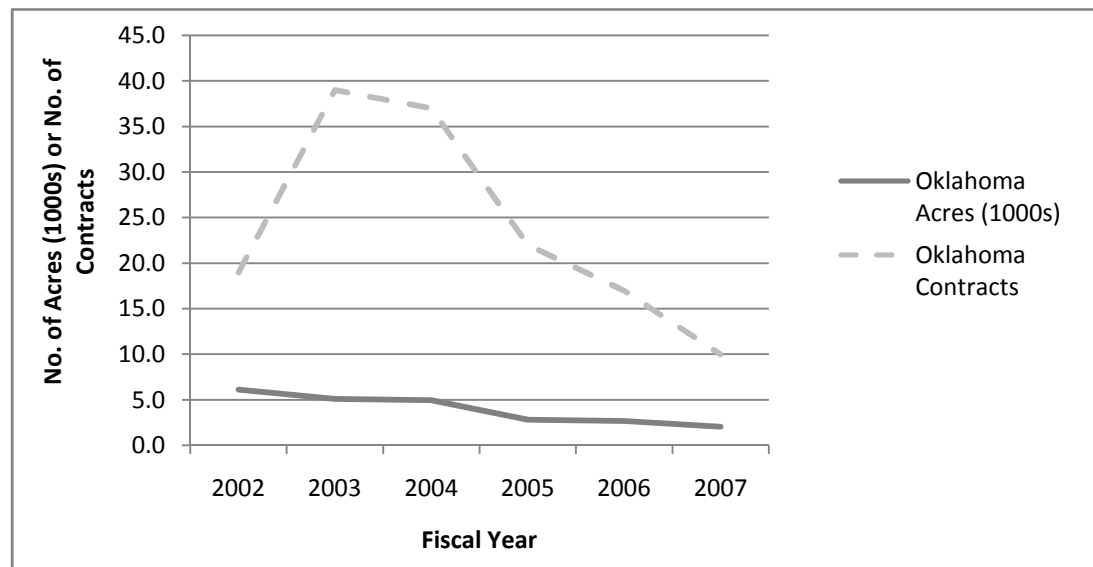


Figure 1.3. Annual number of WRP contracts and WRP acres enrolled in Oklahoma for FY2002 through FY2007 (NRCS N.d.-a).

Since 2003, the number of new acres enrolled and the number of new contracts signed have declined markedly both in Oklahoma and nationwide (NRCS N.d.-a; see Figures 1.2 and 1.3). In Oklahoma, the number of new acres enrolled declined steadily from 5,123 in 2003 to 2,049 in 2007. Nationwide, the number declined from 213,280 acres in 2003 to 95,395 acres in 2007.

The cumulative limit was raised to 3,014,200 total acres by the 2008 Farm Bill, but cumulative enrollment in the program (approximately 2 million acres) still lies well below the previous limit of 2,275,000 acres (NRCS 2008a).

Trends in the number of WRP applications, the backlog of unfunded projects, and state allocations help fill in this picture for Oklahoma. During the period from 2006 to 2008, WRP applications in Oklahoma declined sharply and the number of rejected easement offers rose (Stephen Tully, personal communication). At the same time the backlog of unfunded applications fell from 52 (9,219 acres) in 2005 to 7 (1,265 acres) in 2008 (NRCS N.d.-a and unpublished data), indicating either that the NRCS has been drawing new enrollments from the backlog list or that applicants on the backlog list have been withdrawing their applications, or both. WRP allocations to Oklahoma were flat over roughly the same time period, totaling \$4.0 million in 2005 and 2006 and \$4.1 million in 2007 (NRCS N.d.-a). Taken together with trends in the number of contracts signed and acres enrolled, these figures depict a dramatic reversal of fortune for the WRP. Landowner participation has fallen and the NRCS has been paying more per acre, including both easement and restoration costs, for the projects that are enrolled in the program.

One reason for the decline in new enrollments and the increase in costs per acre may be that conservation-minded landowners with the largest, most cost-effective projects were enrolled early in the program (Stephen Tully, personal communication). Now that this low-hanging fruit has been picked, suitable projects and willing landowners are more difficult to locate. A second reason may be the USDA instituted changes in the appraisal process used to value WRP easements. The easement value was originally assessed as the fair market agricultural value of the land, but from 2006 to 2008, that value was assessed as the difference between the agricultural value of the land and the residual value after taking easement restrictions into account (OIG 2005; Ducks Unlimited 2007). To the extent that landowners were motivated by, or dependent upon, the size of the easement payment, this change reduced the pool of landowners willing to participate in the WRP. The 2008 Farm Bill reinstates the original appraisal method used prior to 2006 (NRCS 2008a). Unfortunately, this bill also imposes new restrictions on eligibility that may negate any positive effects of the appraisal provisions. For example, the

length of time a parcel of land must be owned before it can be enrolled in the WRP has been raised from one year to seven years (NRCS 2008a).

To these issues related to decline in new WRP enrollment can be added those associated with geographic variation in enrollment. Enrollment in the program has varied markedly from both state to state and county to county (see Figure 1.1). Some of this variation can be explained by the natural distribution of wetlands. For example, the largest WRP enrollments are found in states such as Louisiana, Arkansas, and Mississippi that have extensive wetland areas (Copeland and Zinn 2008). Similarly, wetland distribution accounts for much of the variation within Oklahoma. It is no mystery that McCurtain County in southeastern Oklahoma consistently has the highest enrollment in the state and that some western counties such as Roger Mills have had no acres enrolled at all (NRCS, unpublished data). McCurtain County has an abundance of wetlands and 25% hydric soils, while Roger Mills has few wetlands and only 2.4% hydric soils (NRCS 2008b and N.d.-b). According to estimates, 61% of the wetlands in Oklahoma occur in the eastern third of the state (OCC 1996).

However, not all enrollment variation can be easily explained. As of 2008, 58,366 acres had been enrolled in Oklahoma, while in Texas, a state much larger in terms of total land area and total wetland area, 64,380 acres had been enrolled, only 10.3% more (NRCS N.d.-a). Within individual states, we see a similar pattern of unexplained variation. Cotton County in the southwestern quadrant of Oklahoma had 2,958 acres enrolled at the end of FY 2007, while Jefferson County had only 625 acres enrolled (NRCS, unpublished data). This was true even though Jefferson County has more hydric soils than Cotton County (22.9% vs. 10.8%) (NRCS 2008b and N.d.-b). This residual variation is significant for two reasons. First, to the extent that the benefits of wetlands (e.g., flood control, recreational opportunities) are experienced locally, an uneven distribution of WRP projects entails an uneven distribution of benefits. And second, areas with lower enrollment than expected may contain untapped pools of potential WRP enrollees.

Section 1.4: Understanding Landowner Participation

The success of positive incentive-based conservation programs ultimately depends on the ability of implementing agencies to attract the voluntary participation of landowners. When landowners are unaware of the program or are unwilling or unable to participate in the program, the number of acres offered for enrollment and the conservation value of those acres will decline, and the costs will rise. It is thus vital that implementing agencies understand the factors that influence whether landowners participate in their programs.

In the case of the WRP, we must look to the factors that influence whether landowners are aware of the WRP and whether they are willing and able to sell an easement on their land to the government. Potentially important factors include attitudinal variables, demographic or socioeconomic variables, land operation variables, information variables, market variables, and variables related to the program and its implementers at the NRCS. In this thesis, I will examine what these variables suggest about who becomes aware of the WRP and who decides to participate.

CHAPTER II

REVIEW OF LITERATURE

A number of different sources provide useful information about the factors likely to influence, or at least predict, landowner participation in the WRP. Although not extensive, the published literature on the WRP itself is obviously germane to the issue. To this work can be added the unpublished insights of NRCS agents who have watched the growth of the WRP and interacted directly with both participant and non-participant landowners. And finally, because the WRP is an incentive-based, voluntary conservation program, the published literature on other IBMs and on voluntary landowner conservation behavior in general may serve to provide a broader perspective on the narrow question of WRP participation.

Section 2.1: Participation in the WRP

As noted above, the public policy literature on participation in the WRP program is limited, but a few studies have looked specifically at the WRP or have touched on it as part of a broader survey. Shortly after completion of a pilot phase of the WRP, Schnepf (1994 as cited in Despain 2005 and in Pease et al. 1997) conducted a series of nineteen focus groups with landowners in seven states. WRP participants identified several reasons for their willingness to enroll land in the WRP, including recreational opportunities, wildlife benefits, risk reduction, economics, and land isolation (Schnepf 1994 as cited in Pease et al. 1997). Among both participants and non-participants, several problems were identified. These included the term of the easement, economic considerations such as property tax liability, procedural issues related to application and enrollment, availability of information on the program, and transparency in NRCS decision-making. Most farmers exhibited an awareness of the value

of wetlands as well as the value of government involvement in wetland conservation, but they also expressed distrust of information provided by government agencies. The degree of distrust that landowners expressed depended in large part on the individuals providing the information.

Pease et al. (1997) conducted a nationwide survey of participants in three wetlands restoration programs—the WRP (NRCS), the Emergency Wetland Reserve Program (NRCS), and the Partners for Fish and Wildlife Program (USFWS). This study examined demographic and farm characteristics of participants in these program. Most participating landowners had small- and medium-sized landholdings, and most earned twenty percent or less of their income from farming. Forty percent had owned their land for less than ten years. The survey also examined the medium by which landowners learned of the program as well as their declared motivations for participation. Major reasons for participation included wildlife habitat, wilderness benefits to future generations, and aesthetics. Few participants reported financial profitability as a significant reason for enrollment, but many indicated, somewhat inconsistently, that a reduction in easement payments or help with restoration would decrease the likelihood of their participation. One-to-one contact with NRCS or USFWS agents was the single most important way that landowners learned about wetland restoration programs.

Forshay et al. (2005) examined the level of satisfaction displayed by landowners participating in the WRP program in Wisconsin. Satisfaction depended on landowner inclusion in the restoration process and the amount of the easement offer. Sources of dissatisfaction related to certain restrictions on the use of WRP land, to the tax liability borne by landowners, and to lack of communication with the NRCS.

Unfortunately, Schnepf (1994 as cited in Despain 2005), Pease et al. (1997), and Forshay et al. (2005) provide only limited insight into factors that *determine* participation. Within the focus groups conducted by Schnepf (1994 as cited in Despain 2005) little was found to distinguish participants from non-participants. Both landowner groups identified the same

problems and displayed the same attitudes in qualitative terms, and thus we are left to wonder whether the behavioral difference between the two groups arises from the relative weights given to the identified factors or from factors not identified by the survey. Pease et al. (1997) and Forshay et al. (2005) focused on participants and did not directly examine non-participants. Pease et al. (1997) did report limited information on non-participants, but only as filtered by the perceptions of participants. Forshay et al. (2005) provided no information, direct or indirect, on non-participants.

Blumenfeld (2002) used a mail survey to examine characteristics of individuals who enrolled in the WRP (enrollees) and those who enrolled but later withdrew (disenrollees). Average age of respondents exceeded 50 years, and most derived less than 20% of their income from farming. The most important benefits cited for enrollment were wildlife habitat, game habitat, and natural beauty with ratings of 4.85, 4.33, and 4.18 respectively (5-point scale). Financial assistance received a rating of only 3.85. However, in response to a separate question, almost 60% said they would not enroll without easement payments. Design factors (dissatisfaction with wetland design) and financial factors were cited most frequently as reasons for withdrawal.

Most attitudinal and demographic characteristics were the same for both groups, but a few differences were observed (Blumenfeld 2002). With respect to wetland attitudes, the only observed difference was that enrollees were more likely to rate wildlife habitat as a very important wetland benefit than were disenrollees. All other attitudes related to wetlands were similar. With respect to reasons for enrollment, the two groups showed greater differences. Enrollees gave a higher rating to wildlife habitat, game habitat, natural beauty, educational benefits, and the needs of future generations as reasons for enrollment than did disenrollees. On the other hand, enrollees rated the importance of "appraised value assessments" and reductions in assessed property value lower than disenrollees. Oddly, the author downplays these differences and concludes that there is weak support for overall similarity of reasons for enrollment in the two groups. In any event, the utility of the results is limited by the failure to compare these groups with those expressing no interest in enrollment. Examining applicants

and non-applicant landowners might have revealed more about determinants of participation than the comparisons chosen.

Luzar and Diagne (1999) used information from a survey of Louisiana landowners to develop a probit model predicting participation in the WRP. Nine variables were found to be significant predictors of participation: education (college or not), income (above or below \$55,000/yr.), size of town of residence ($\geq 10,000$ or not), number of dependents, membership in an environmental organization, acreage of wetlands owned, ownership of farmed wetlands, self-assessed level of understanding of the WRP program, and attitude towards enrolling wetlands in the WRP. All of these, except number of dependents and education level, were positively correlated with probability of participation in the WRP. The overall model predicted participation correctly 88.11% of the time.

Diagne (1996) provides a fuller analysis of the same data set, including a comparison of traditional econometric models of WRP participation with those incorporating attitudes towards WRP participation and towards the environment more generally. The attitude measures utilized included a scale based on the theory of reasoned action (see section 3) and one based on the new environmental paradigm scale (NEP; see Dunlap and Van Liere 1978). Each attitude measure made small but significant contributions to the predictive power of the model. The author concludes that economic and demographic factors are most important and that attitude measures, while significant, make only marginal contributions to our understanding of participation. However, this conclusion appears to be predicated on a confounding of the additional variance explained by a variable when added to a model containing control variables and the total explanatory power of that variable. To the extent that attitudes are correlated with other variables already included in the model (e.g., age and education), the importance of attitudes, as judged by the marginal increase in R^2 , may be underestimated (see discussion in Garson 2008a).

The U.S. Government Accountability Office (2006) examined participation in six USDA conservation programs, including the WRP, in preparation for reauthorization of the 2008

farm bill. The views of NRCS and Farm Services Agency officials, soil and water conservation district officials, and both participant and non-participant landowners were solicited. With respect to the WRP, financial incentives were the most frequently cited reason for participation followed by personal interest in conservation. The most important disincentives were excessive paperwork, fears about government regulation, limited funding, restrictive eligibility and implementation requirements, implications for future agricultural production, and contract length.

Eisen-Hecht (2005) used conjoint analysis to determine the aspects of wetland conservation programs (including the WRP) that were most important to North Carolina landowners. The different program characteristics examined in the analysis included contract length, contract type, entity administering the program, payment amount, and land use restrictions. The results indicated that variables related to control of the land (i.e., restrictions on land use, length of the contract) and to the entity administering the program were more important to landowners than payment amounts. Not surprisingly, landowners preferred shorter contracts, fewer restrictions on land use, and state, as opposed to federal, administration. Eisen-Hecht (2005) also performed cluster analysis to discern differences between those more and less likely to participate in wetland conservation programs. Few differences were identified from this analysis, although it was observed that those more likely to participate in programs in the future were currently participating in similar programs, owned more undisturbed wetlands, and were more likely to recreate outdoors.

Section 2.2: Insights from WRP Implementers

State NRCS agents responsible for implementation of the WRP in Oklahoma point to two major factors, other than wetland distribution, that appear to influence participation. The first of these is exposure to wetland restoration projects (Stephen Tully, personal communication). When one farmer enrolls land in the WRP, friends and neighbors learn of the program and consider making applications themselves. The result is an overall higher level of enrollment in the county. Similarly, the presence of large wetland projects, whether or not they are associated with the WRP, appears to raise awareness of wetlands among the local

population and thus increase the level of WRP participation. An example of this effect is the increased WRP enrollment in Tillman County that followed completion of the Hackberry Flats project (Stephen Tully, personal communication).

The second factor identified by state NRCS agents is the behavior of local district conservationists (Stephen Tully, personal communication). While review and approval of applications occurs at the state level, local DC's are primarily responsible for identifying potential WRP sites and encouraging local landowners to apply to the program (NRCS 2007). Thus, the knowledge, attitude, and effort level of these local NRCS officials may influence within-state variation in outcomes (i.e., acres enrolled) by influencing the flow of applications and the success of those applications. This possibility is supported by research on the role of agency officials in stimulating interest in soil conservation as well as participation in programs such as the CRP (see references below).

Section 2.3: Participation in IBMs and Adoption of Conservation Practices

The literature addressing long-established voluntary incentive-based programs (e.g., CRP, SWAP, etc.) and landowner conservation practices (e.g., terracing, no-till cultivation, etc.) is much larger than the literature addressing WRP participation. It thus provides the most extensive source of insight into what factors are likely to influence participation in this relatively young program. Another advantage of this body of research is the degree to which it has been grounded in theory. Several theoretical models (i.e., economic, farm structure, diffusion of innovation, diffusion-farm structure, behavioral, and psychosocial models) have helped to frame research into participation and adoption decisions. These models provide an important point of departure for any study examining participation in the WRP.

Section 2.3.1: Economic Models

Many researchers have analyzed participation in the CRP, WQIP, ESA (Environmentally Sensitive Areas), and other IBMs using an *economic model* of landowner decision-making (Cooper and Osborn 1998, Parks and Kramer 1995, Parks and Schorr 1997, Platinga et al. 2001). These models assume that landowners are rational actors whose decisions will

maximize net returns from their land. Participation is thus determined by the opportunity costs of participation, the size of the incentive payments, and related factors such as predictability of land values. Farm structure and income variables (e.g., income, percent of income from non-farm sources, and debt to asset ratio) are also important in these models

Section 2.3.2: Diffusion of Innovation Model

Another influential model is known as the *diffusion of innovation model* (Rogers 2003). Diffusion is the process through which an innovation (that is, an idea, practice, or object perceived as new) is communicated between individuals. According to the model, diffusion can be understood by examining four crucial elements: innovation (e.g., characteristics that influence adoption), mode of communication (e.g., mass media, contact with neighbors, contact with change agents), social system (e.g., social norms related to innovation, role of opinion leaders), and time (e.g., rates of adoption, qualities of early adopters) (Rogers 2003). Underlying these four elements is a focus on the process of adoption and the characteristics of adopters. An adopter must become aware of an innovation, recognize its value in meeting a perceived need, and develop a positive attitude towards the innovation (Rogers 2003).

Patterns identified by diffusion research provide useful insight into adoption of conservation practices and participation in incentive based programs. Of particular relevance are patterns related to the specific factors affecting rates of adoption, qualities of early adopters, and qualities of successful change agents.

Among the most important factors found to affect the rate of adoption are innovation characteristics such as perceived relative advantage (profit or utility advantage), compatibility with prevalent values, complexity, "trialability", and observability (Rogers 2003). All else being equal, the rate and/or extent of the adoption of an innovation should be positively correlated with the its perceived degree of advantage, the degree to which it is easily observable, its compatibility with community values, its perceived simplicity, and the degree to which it can be implemented on an experimental scale.

Qualities that distinguish early adopters include responsibility for larger units (e.g., farms, companies, schools), and more education, wealth, and upward social mobility than late adopters (or non-adopters) (Rogers 2003:288). With respect to attitudinal variables, early adopters show a more favorable attitude towards change, science, and uncertainty, and have more flexibility in their belief systems (Rogers 2003:289). With respect to information, they have access to more sources of information both within their social system and without, and they are more oriented towards the latter (i.e., more “cosmopolite”) (Rogers 2003:291). In particular, they have more exposure to change agents, mass media, and to interpersonal communication channels.

Qualities that distinguish successful change agents include greater effort, greater client orientation (as opposed to agency orientation), and greater empathy with clients (Rogers 2003:373-7). Success is also related to the degree of “homophily”, the similarity between the change agent’s and the client’s culture and language (Rogers 2003:381-4). Because of this, change agents typically have more success with clients who are better educated, more “cosmopolite,” and of a higher socioeconomic class than the community as a whole (Rogers 2003:382). It has also been observed that change agents are relatively more important during the early stages of the decision process when clients are learning about and investigating an innovation than during later stages when clients are making a final decision to adopt or reject the innovation (Rogers 2003).

Some empirical support for the application of diffusion model predictions to the adoption of conservation practices and to participation in conservation IBMs has been found. With respect to attitudes, a number of studies have found correlations with adoption and participation decisions. Most of this research has examined attitudes specific to conservation (e.g., towards conservation, wetlands, private property) and not the more general attitudes identified by the diffusion model (e.g., towards science, change). This research suggests that attitudes towards the environment and conservation (Cary and Wilkinson 1997, Lohr and Park 1995, Lynne et al. 1988, Lynne and Rolla 1988, Napier et al. 1988, Napier et al. 1995), towards farming (Lynne et al. 1988), towards property rights (Napier et al. 1988), and towards

government (Kraft et al. 1996) may influence decisions to participate in IBMs and/or adopt conservation practices. Kabii and Horwitz (2006) review studies related to landowner attitudes about participation in conservation easement programs in Australia and elsewhere. They suggest that relevant attitudes can be divided broadly into three categories: attitudes related to stewardship of the land, attitudes about the sanctity of private property, and attitudes about equity and the just apportionment of the benefits and costs of conservation initiatives.

It should also be noted that non-significant or mixed results are also frequently obtained in studies examining landowner attitudes. For example, Cary and Wilkinson (1997) found that attitude towards conservation and the environment was a predictor of some conservation practices but not others. And in a review of studies examining the use of best management practices (BMPs) by U.S. farmers, Prokopy et al. (2008) report that the lack of a relationship with conservation attitudes is more common than a positive correlation. Knowler and Bradshaw (2007) report a similar finding in their review of “conservation agriculture” internationally.

The important role played by change agents and information access has been demonstrated in some studies. Kraft et al. (1996) found that participation in WQIP in Illinois was higher among landowners who had had more contact with NRCS officials during the preceding year. In a study of the CRP, Loftus and Kraft (2003) found that both contact with NRCS officials and awareness of eligibility were positively correlated with enrollment. In a survey of Colorado landowners with conservation easements, Marshal et al. (2002) found that 82% of respondents rated “confidence in the land trust” as a significant factor in their having successfully placed easements on their property. Such research suggests that the quality of contacts with change agents, not just the number of contacts, may be important in promoting and sustaining participation in such programs.

A number of studies of soil conservation practices have also identified contact with agency officials as a significant correlate of the use of soil conservation practices (Lockeretz 1990,

Lohr and Park 1995, Nowak 1987). In their review of agricultural BMPs, Prokopy et al. (2008) report that “agency networking,” that is, the extent of a landowner's connections with agency personnel, was positively related to the adoption of agricultural BMPs in 11 studies, negatively correlated in 3 studies, and insignificant in 11 studies. Knowler and Bradshaw (2007) report a similar pattern for the extension activities of change agents.

More broadly, access to more information sources, whether or not those sources are connected with change agents, has often been found to increase the likelihood that landowners will learn about and adopt a conservation program or practice. Prokopy et al. (2008) and Knowler and Bradshaw (2007) report that when the effect is significant, use of more information sources is usually a positive predictor of BMPs and conservation agriculture. Napier et al. (1986) found that those who used more sources of information were more concerned about the environment and conservation.

With respect to landowner level of education, several studies have found a positive relationship between education and rates of adoption and participation (e.g., Ervin and Ervin 1982, Kraft et al. 1996). This effect may be due to better educated individuals having more contact with change agents, having access to more information, being more open to change, or being better prepared to understand and implement new practices. In their review, Prokopy et al. (2008) report that 21 studies found a positive correlation between education and adoption of BMPs, while seven studies found a negative relationship, and 31 studies report no significant relationship. Knowler and Bradshaw (2007) found a similar result in their review of the adoption of conservation agriculture internationally. Seven of the studies reviewed found a significant positive relationship between education and adoption, three found a negative relationship, and eleven no relationship at all.

Inconsistencies with respect to all of the variables identified here strongly suggest that the effect of different predictor variables is highly dependent on region and context. For example, although education is usually a positive predictor of conservation behavior, the cultural idiosyncrasies of a region may conspire to produce a negative relationship. Napier

et al. (1995) found just such a relationship in a study that included a large number of Mennonite farmers. These farmers were both more likely to participate in a wetland conservation scheme and less likely to have high levels of education, and thus the correlation between education and participation was negative. Knowler and Bradshaw (2007) argue that the search for truly universal predictors of conservation behavior may be quixotic in the face of regional characteristics such as these.

Section 2.3.3: Diffusion-Farm Structure Model

Detractors have criticized the diffusion model for its emphasis on access to information and on the psychosocial characteristics of individual adopters and non-adopters (Goss 1979). They point to the relative lack of attention given to socioeconomic constraints that prevent adoption (Goss 1979). Although income and socioeconomic status do figure into the diffusion model, their effects are considered only insofar as they influence access to information and the relationship between change agents and potential adopters (Rogers 2003). In response to this perceived deficiency, many researchers have sought to examine the relative importance of *diffusion parameters* and *socioeconomic constraint parameters* (Yapa and Mayfield 1978, Hooks et al. 1983, Nowak 1987, Pampel and van Es 1977).

Because the two types of parameters are not mutually exclusive, they have often been applied together to explain participation and adoption. In the field of rural sociology, this combined set of variables has been called the *diffusion-farm structure model* (Camboni and Napier 1993, Hooks et al. 1983, Napier et al. 1988, Nowak 1987, Sommers and Napier 1993). This model incorporates variables related to the financial capacities of landowners (e.g., income, farm size, debt-to-asset ratio, and percent of income from farm and non-farm sources) alongside those emphasized by earlier efforts. Kabii and Horwitz (2006) suggest that these variables be viewed as establishing the boundaries within which attitudes and information variables may influence decision-making.

Many studies have demonstrated the importance of these farm structure variables, but as was the case with the other variables already examined, the results obtained have not always

been consistent. For example, most studies have found that the size of an individual's landholdings is a good predictor of the adoption of conservation practices and of participation in conservation programs (Cary and Wilkinson 1997; Napier et al. 1995), but other studies have found contrary results (Napier et al. 1986). Similarly, percent of income from non-farm sources has been found to have both positive (Loftus and Kraft 2003) and negative effects (Napier et al. 1995.) In general, when a significant relationship is found, conservation behavior usually increases as income, farm size, and percent non-farm income increase, and as the debt to asset ratio decreases (Kabii and Horwitz 2006; Knowler and Bradshaw 2007; Prokopy et al. 2008). Farm size and income are believed to be important because of their effects on a landowner's capacity to implement changes. Percent non-farm income may be important because it reflects the degree to which land management decisions are likely to be motivated by the need to generate income from the land. Those with more non-farm income will be less dependent on the land and more open to decisions based on ideas of conservation, stewardship, and equity. Debt to asset ratio is believed to be important because of the constraints that high debt may place on a landowner's ability to implement changes. Those with high debt may also be more averse to the risk associated with changing land management practices.

Section 2.3.4: Behavioral Approach and Social Psychology

Another research tradition that has contributed to our knowledge of landowner participation and adoption decisions has been called the "behavioral approach" (Burton 2004; Morris and Potter 1995). This conceptual framework is defined as ". . . one which focuses on the motives values and attitudes that determine the decision-making processes of individual farmers" (Morris and Potter 1995: 55). This emphasis on understanding the behavior of individual landowners through their attitudes is similar to that of the diffusion model; however, researchers employing the behavioral approach and the diffusion model have not always taken note of each other, the former tradition being focused primarily on European agricultural policies and practices and the latter on their American counterparts. As with the diffusion model, the behavioral approach is often combined with farm structure variables,

such as farm size and income (Battershill and Gilg 1997; Beedell and Rehman 2000; Gasson and Potter 1988; Lynne et al. 1988; Morris and Potter 1995).

Importantly, many of the studies in this tradition incorporate elements of social psychology (Beedell and Rehman 2000, Burton 2004, Lynne et al. 1988, Morris and Potter 1995; Wilson 1996). In particular they incorporate the *theory of reasoned action* (TRA) (Ajzen and Fishbein 1980) and the *theory of planned behavior* (TPB) (Ajzen 1991).

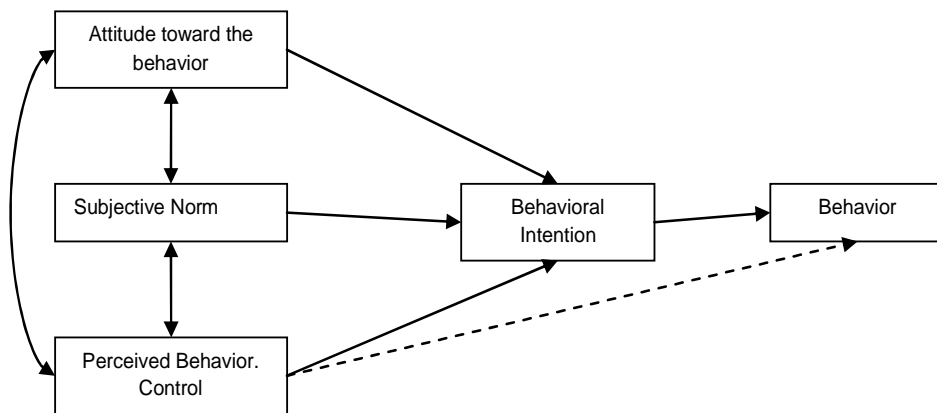


Figure 2.1. Diagram depicting the theory of planned behavior (TPB) (after Ajzen 1991).

According to the TRA, attitudes by themselves are poor predictors of behavior, the relationship between the two is highly dependent upon context. Instead, it is proposed that individual behaviors are best predicted by behavioral intentions (motivations to perform individual behaviors), which are in turn dependent upon both the actor's attitudes and the actor's perceptions of the attitudes of significant reference groups (e.g., family, neighbors, colleagues), a factor called the *subjective norm*. The TPB elaborates on the TRA by introducing the concept of *perceived behavioral control*, that is, the degree to which the actor perceives the behavior to be under his/her volitional control (Ajzen 1991; see Figure 2.1). It is the use of these two concepts to place behavior in a social context that constitutes the major contribution of the TRA and TPB models (Burton 2004). Failure to incorporate fully such elements may be one reason for the inconsistency of results related to attitudes and conservation behavior.

CHAPTER III

METHODOLOGY

Section 3.1: General Approach and Participation Model

Based on the research reviewed in Chapter II, a heuristic model was developed to serve as the basis for examining participation in the WRP program. This model adopted the landowner's viewpoint and divided WRP participation into three stages: 1) *awareness of the program*, 2) *submission of an application*, and 3) *acceptance of an easement offer and enrollment in the program*. Factors with the potential to distinguish different categories of landowner (e.g., applicants from non-applicants) at each stage were identified and used as the basis for the formulation of a self-administered mail questionnaire.

The WRP participation model is depicted in Figure 3.1. Although the approach adopted incorporates elements of a path analysis, this analytic technique was not formally undertaken, and the arrows in Figure 3.1 do not necessarily reflect causal relationships. The model is intended only as a heuristic device for generating and testing hypotheses about landowner involvement with the WRP. In many cases, there is good intuitive reason for believing that the independent variables are causally connected with the outcome variables (e.g., contact with a district conservationist and awareness of the program), but in other cases it is equally clear that the independent variable is merely a predictor of the outcome variable and bears no causal connection with it (e.g., annual household income and awareness of program).

Stage 1-- Awareness of the WRP: A necessary prerequisite for participation in the WRP is awareness of the program. We would expect exposure to the WRP to be related to experience with wetlands (having visited a wetland, being aware of large wetland projects, or

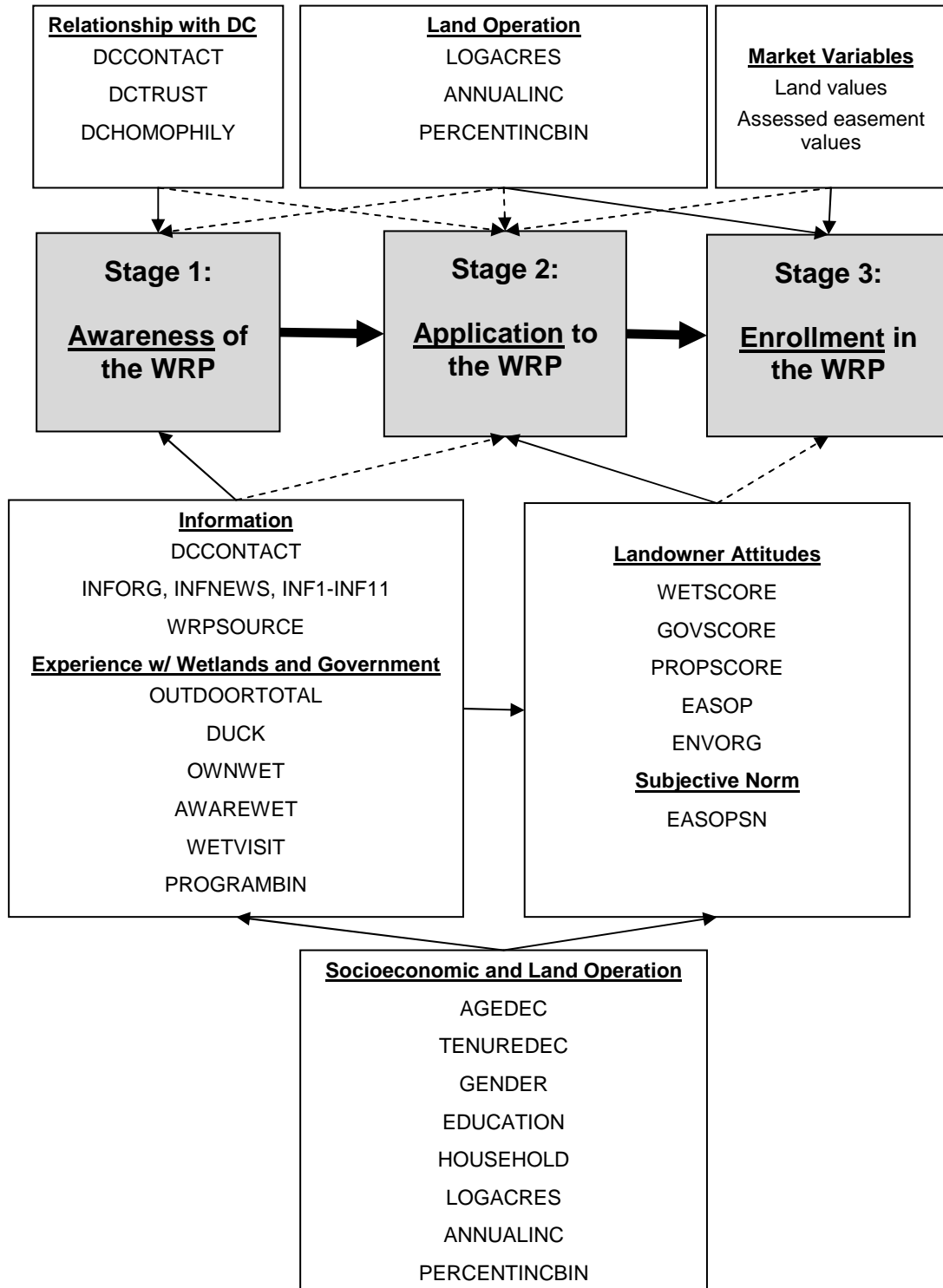


Figure 3.1. Diagram showing factors potentially relevant to landowner participation in the WRP. Participation stages are shaded gray. For a description of each variable, see Table 3.2.

engaged in outdoor activities such as duck hunting), primary sources of information, the landowner's relationship with the NRCS (i.e., change agents), and experience with other conservation programs. Other variables that are likely to correlate with awareness of the WRP include socioeconomic and land operation variables, such as age, education, length of tenure, and size of landholdings. These variables may influence awareness directly, their effects may be mediated by the other variables identified above, or they may simply be correlates of influential factors.

Stage 2--Decision to Apply: After the landowner has become aware of the program, the next stage involves a decision to apply to the program. This decision can be expected to depend on a number of factors, including land operation variables and attitude towards participation in easement programs such as the WRP. The landowner's attitude towards participation should itself be dependent on disposition towards a number of related attitudinal objects, including the value of wetland, restrictions on property rights, and government involvement in the management of natural resources. According to the TRA, the subjective norm--the individual's perceptions of the attitudes of significant others—should be important as well. Market variables may have some influence at this stage, but their most important effects will be on the next stage of decision-making.

Relationship with the NRCS, experience with wetlands and other conservation programs, important sources of information, and socioeconomic variables (e.g., age, level of education) may also have important effects on the decision to apply and on the subsequent decision to accept an easement offer. However, much of the effect of these variables is likely to be felt through their influence on, or association with, landowner attitudes.

Stage 3: Decision to Accept Easement Offer: The decision to accept an easement offer will be predicted by all of the same variables that affect the decision to apply. However, we would expect the relative importance of these variables to change. Land operation variables, such as size of landholdings, income, percent non-farm income, and debt to asset ratio will

increase in importance as the landowner decides whether to accept an easement offer. This is true because it is only after the amount of the easement offer is known that the landowner can easily compare the economic costs and benefits of the proposal. For this same reason, market variables, such as land values and rental rates, will also have their greatest effect at this stage.

Logistic regression (see section 3.4) was used to analyze the data generated from the landowner survey with the binary outcome variables being awareness of the program and application to the program, and the predictor variables being those described in the model above and in Table 3.2. Ordinary least squares regression (see section 3.5) was used to analyze the predictors of landowner attitudes. Ideally, it would be possible to separate the decision to apply (Stage 2) from the decision to accept an easement offer and enroll (Stage 3). Unfortunately, this proved impossible given restrictions on the availability of data. Information on WRP applicants who did not subsequently enroll in the program is not publicly available, and obtaining an adequate number through random sampling is impractical given the low frequency of this class of landowner relative to the overall population. Information about applicants is thus dependent on access to internal agency records that the NRCS declines to provide on privacy grounds. Given these limitations, it is not possible to separate stage 2 and stage 3 empirically or analytically, and the findings present here necessarily conflate the two.

Section 3.2: Sample Selection

Two separate samples were used in this study. One sample, drawn from soil survey and plat maps, was comprised of non-enrollees, including both non-applicants and a small number of non-enrollee applicants. A second sample, based upon information provided by the NRCS, included enrollees in the WRP.

Section 3.2.1: Non-enrollee Sample Selection

A stratified random sample of 461 landowners was drawn from nine Oklahoma counties: Atoka (N=50), Choctaw (N=51), Craig (N=50), Lincoln (N=50), McCurtain (N=50), Muskogee (N=57), Ottawa (N=49), Rogers (N=52), and Wagoner Counties (N=52). These focal counties were

selected in consultation with Stephen Tully, state biologist for the Oklahoma branch of the NRCS. Mr. Tully was asked to identify counties with high levels of WRP enrollment (e.g., McCurtain and Lincoln) and also counties with high potential for WRP enrollment, but low actual enrollment (e.g., Atoka and Muskogee). From the list of 14 counties provided, five were eliminated because recent plat maps (i.e., those published within the last 20 years) were not available. Due to the relative lack of current and former wetland areas in western Oklahoma and the pronounced eastern bias of plat mapmakers, all nine of the remaining counties chosen were located in eastern Oklahoma (eight counties) or central Oklahoma (one county). See Table 3.1 for physical and demographic characteristics of all focal counties.

Table 3.1. Physical and demographic characteristics of the nine Oklahoma counties included in the landowner survey. The number of WRP contracts for each country is also shown.

County	Land Area (sq.mi.)*	% Hydric Soils**	Ann. Precip. (in.)***	Est. Pop. (2006)*	Median Income (2004)*	% High School Grad.*	WRP Contracts†
Atoka	978.29	16.4%	46.57	14,340	\$27,211	69.4%	7(6)
Choctaw	773.93	28.2%	49.24	15,334	\$25,197	69.0%	10
Craig	761.03	7.8%	43.97	15,046	\$31,655	76.9%	9
Lincoln	957.74	2.1%	38.40	32,645	\$33,820	77.5%	29 (26)
McCurtain	1,852.26	25.0%	52.02	34,018	\$26,113	69.2%	36 (30)
Muskogee	813.85	6.4%	45.61	71,018	\$31,367	75.1%	1
Ottawa	471.32	10.0%	44.85	33,026	\$29,948	75.7%	6
Rogers	674.95	7.6%	43.45	82,435	\$48,555	83.4%	12(9)
Wagoner	562.91	10.5%	44.77	66,313	\$44,739	81.3%	0

*Data from U.S. Census Bureau (2008).

**Data from NRCS (2008a) and NRCS (N.d.)

***Data from Oklahoma Climatological Survey (N.d.)

†Some enrollees signed multiple WRP contracts. Where the number of contracts and number of enrollees differ, the latter is provided in parentheses.

In each of the nine counties, landowners were selected through a three step procedure using soil maps available from the NRCS's Web Soil Survey 2.0 (NRCS 2006a) and commercially available plat maps (*Atoka County Plat Book 2006; Choctaw County Plat Book 2006; Craig County Plat*

Book 2005; Lincoln County Oklahoma 1995 Plat Book; McCurtain County, Oklahoma 2005 Plat Book; Muskogee Co. Oklahoma 1991 Plat Book; Ottawa County Oklahoma 2002 Plat Book; Rogers County Oklahoma 1998 Plat Book; and Wagoner County Oklahoma 1999 Plat Book). In the first step, the random number function of Microsoft® Excel was used to select first a township and then a section. A township is composed of 64 sections each of which covers 640 acres. In the second step, the plat map for the chosen section was compared visually with the digital hydric soils maps. Hydric soils are those that form “under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part” and thus are one indicator of current or former wetland areas (NRCS 2006b:1). A list of all eligible landowners in the section who owned parcels with hydric soils was generated based on this comparison. In the third step, a landowner was chosen from the section list, again using the Microsoft® Excel random number function. If there were no eligible landowners with hydric soils in the section, a new township and section were chosen and the procedure was repeated.

Individual landowners, trusts, limited liability companies (LLCs), and limited partnerships (LPs) were all eligible for inclusion in the sample. If no individuals were listed (e.g., Doe Family Trust) or multiple landowners were listed (e.g., John and Jane Doe), the individual “most responsible for making land management decisions” was asked to complete the questionnaire. In the case of limited liability companies and limited partnerships, the questionnaire was addressed to the “managing member” or the “managing partner,” respectively. Federal, state, and municipal governments, as well as public corporations (i.e., those designated by “Inc.” on plat maps) were not eligible for inclusion.

Because portions of the questionnaires asked for information about the opinions and influence of neighbors, we attempted to exclude two next-door neighbors from both being included in the sample. If a landowner’s holdings in the section were contiguous with the property of a landowner already included in the sample, then the former was ineligible for inclusion in the sample. Because there was no efficient way to check all of the holdings of every landowner, this rule did not preclude the possibility that two landowners in the sample might own contiguous

parcels of land in sections not directly examined. It also did not preclude two landowners with non-contiguous land in the same section from both being selected for the sample.

Addresses for landowners were identified through county land records available through OKAssessor.com (Visual Lease Services 2008), a website that provides online access to the land records of county assessors in Oklahoma. If these records indicated that the parcel had passed to another eligible landowner, the new landowner replaced the original landowner in the sample. If the parcel had been subdivided between multiple new landowners, then the landowner owning $\geq 75\%$ of the original parcel replaced the original landowner. If no single individual or entity owned $\geq 75\%$ of the parcel, then the replacement was chosen at random from among the new landowners. If an address for the parcel's owner was not available, the current ownership of the parcel could not be determined, or the parcel had passed to an ineligible landowner, then a new landowner was chosen from the list for that township and section. If no other eligible landowners remained on the list, a new township and section were selected at random and the procedure repeated.

After the initial mailings (see Section 3.3), seven pre-notice letters were returned as undeliverable. To help insure an adequate sample, seven new landowners were selected and added to the sample. Subsequently, mailings to eight more landowners were returned as undeliverable. Thus the total sample of non-enrollee landowners chosen was 461, while the total sample of contacted non-enrollee landowners was no more than 446.

Coverage Error

Because plat maps did not identify owners of the smallest parcels (~5-10 acres or less), these landowners were not included in the sample. This systematic bias in favor of larger landholdings was exacerbated by the fact that landowners with parcels in multiple sections had an increased probability of being chosen for the study. The mean number of acres owned or held in trust by respondents in the sample was 617.01 acres for non-enrollees (769.91 acres for enrollees), while the mean number of acres for all farms in the nine focal counties was 239.28 acres (NASS 2002).

The two figures are not perfectly comparable given that farms are not equivalent to landholdings with hydric soils, but the difference is suggestive of the size of the potential bias in the sample.

Another potential source of coverage error arose from the inability to find addresses for all landowners originally selected for the sample. In many cases, it was not possible to identify an address for the selected landowner from the land records, either because the landowner's name was not included in the records or because of ambiguity with respect to establishing a unique match between landowner and parcel.¹

Section 3.2.2: Enrollee Sample Selection

A list of all WRP enrollees in Oklahoma up to and including FY2007 was obtained from the Oklahoma state office of the NRCS through a Freedom of Information Act (FOIA) request. All eligible enrollees in the nine focal counties were retained in the sample. As with non-enrollees, all individuals, trusts, LPs and LLCs were eligible, but governments and public corporations were excluded. Because the list provided did not give street addresses for enrollees (only county of enrollment), these addresses had to be obtained through the OK Assessor website and through publically available online phone books. In twelve cases, an address could not be identified or the address identified subsequently turned out to be incorrect (e.g., contacts were returned as undeliverable). The total number of eligible landowners in all nine counties was 94, and thus the total number of enrollees potentially contacted was no more than 82 ($94 - 12 = 82$).

Section 3.3: Questionnaire Design and Survey Implementation

Each landowner in the sample was solicited during June and July of 2008 using a procedure based upon Dillman's Tailored Design Method (Dillman 2007). All landowners in the sample received at least three individual contacts: 1) a *pre-notice letter* advising that a mail questionnaire would be arriving soon; 2) a *questionnaire* accompanied by a cover letter and a self-addressed stamped envelope (SASE) approximately one week later; and 3) a *follow-up postcard* approximately one week after the questionnaire. Enrollees received only one questionnaire, while non-enrollees were asked to choose between a version designed for WRP applicants and

¹ The plat maps consulted for selection of landowners often failed to provide the full names.

Table 3.2. Potential predictor variables for application to the Wetlands Reserve Program (WRPAPPLIED) and/or awareness of the program (WRPAWARE).

Variable	Description	Coding
LOGACRES	Log of the number of acres owned, leased, and held in trust.	N/A
OWNWET	Whether the landowner owns wetlands or former wetlands	0,1
AWAREWET	Whether the landowner is aware of large wetland projects in the area	0,1
PROGRAMBIN	Whether the landowner participates in other conservation programs	0,1
EASOP	Attitude towards conservation easement programs	1-4
EASOPSN	Perceived attitudes of family, friends and neighbors towards conservation easement programs.	1-5
WETSCORE	Score on four item scale measuring attitudes towards value of wetlands	4-20
GOVSCORE	Score on four item scale measuring attitudes towards government involvement in natural resource management	4-20
PROPSCORE	Score on four item scale measuring landowner attitudes toward restrictions on private property rights	4-20
ATT1-ATT12*	Scores on individual attitude items 1 to 12	1-5
INFNEWS	Score on index of the importance of newspaper information sources	4-12
INFORG	Score on index of the importance of organizational information sources	4-16
INF1-INF11**	Rating of the importance of individual information sources 1 to 11	1-4
DCCONTACT	Whether landowner has been in contact with the district conservationist	0,1
DCHOM	Perceived level of homophily with district conservationist of the NRCS	1-4
DCTRUST	Overall level of trust in the district conservationist of the NRCS	1-4
WRPSOURCE	How landowner learned about WRP (0=mass media; 1=personal contact)	0,1
AGEDEC	Age (in decades)	N/A
GENDER	Gender (0=male, 1=female)	0,1
TENUREDEC	Length of tenure in the current county of residence (in decades)	N/A
ENVORG	Membership in a conservation or environmental organization	0,1
OUTDOORTOTAL	Number of outdoor recreational activities that the landowner engages in	0-6
DUCK	Whether the landowner is a duck hunter	0,1
WETVISIT	Whether the landowner has ever visited wetlands for recreation	0,1
EDUCATION	Highest level of education reached	1-4
ANNUALINC	Annual household income	1-4
PERCENTINCBIN	Percent of income derived from land (0 = 20% or less, 1=more than 20%)	0,1
INHERIT	Whether the landowner expects a family member to inherit the land	0,1
HOUSEHOLD	Number of persons in household	N/A

*See Tables 3.3 and 3.4 for details on each attitude item and the results of principle component analysis.

**See Table 3.5 for details on each information source and for the results of principle component analysis.

one designed for non-applicants. Landowners were asked to complete the appropriate questionnaire or to return a blank questionnaire if they wished to decline participation in the survey. Each questionnaire was coded so that respondents and non-respondents could be distinguished and records maintained. Those not responding within approximately three weeks of the first questionnaire were contacted a fourth time with a cover letter, replacement questionnaire, and SASE. This final contact also included a one dollar bill to serve as an incentive to respond. See Appendix A for copies of all contact letters and postcards.

As noted above, three separate questionnaires were developed, one for each of the three categories of landowners (non-applicants, applicants, and enrollees). The questionnaires were semi-structured, containing a combination of both closed and open questions. All questionnaires contained items dealing with attitudes (see below), information sources (see below), demographic characteristics, land operation characteristics, and experience with the NRCS and the WRP. The WRP applicant and WRP enrollee questionnaires also included questions related to the landowner's application, reasons for applying, and his or her interactions with the NRCS. The WRP non-applicant questionnaire included a section requesting information about reasons that the landowner had never applied to the program. All questionnaires were pretested with colleagues and with district conservationists of the NRCS to check for inaccuracies, potential sources of confusion, and incomplete response sets. Names, descriptions, and coding for important variables covered by the three questionnaires are provided in Table 3.2. See Appendix B for complete copies of all three questionnaires.

Section 3.3.1: Landowner Attitudes

Attitudes were assessed with twelve Likert-type items related to wetland value, government involvement in the management of natural resources, and restrictions on private property rights (see Table 3.3). Respondents were asked to indicate whether they *strongly disagreed* (1), *disagreed* (2), *neither agreed nor disagreed* (3), *agreed* (4), or *strongly agreed* (5) with the items. Individual respondents who failed to answer any of the items or answered all items identically (e.g., "*neither agree nor disagree*" for all items) were excluded from all analyses related to attitudes. Principle component analysis (PCA) with *promax* rotation of the twelve attitude items

Table 3.3. Twelve Likert-type attitude items included in the landowner survey. Also shown are the item coding and the scale to which they contribute. “Reverse” means that scores on the scale were reversed coded (1 recoded to 5, 2 recoded to 4, etc.) in order to align positively and negatively worded items.

Attitude Item		Coding	Scale
ATT1	Wetlands are an important resource that should be protected.	1 to 5	Wetland
ATT2	Landowners have the right to do as they please on their own land.	5 to1 (Reverse)	Private Property
ATT3	The government has a responsibility to help landowners manage natural resources.	1 to 5	Government
ATT4	Economic progress requires that wetlands be drained.	5 to1 (Reverse)	Wetland
ATT5	Government involvement in the management of natural resources generally does more harm than good.	5 to1 (Reverse)	Government
ATT6	In general, landowners are allowed to get away with too much on their land.	1 to 5	Private Property
ATT7	Wetlands have little, if any, value to society.	5 to1 (Reverse)	Wetland
ATT8	Private property rights should be restricted when it is necessary to promote the greater good.	1 to 5	Private Property
ATT9	Management of natural resources should generally be left to the free market.	5 to1 (Reverse)	Government
ATT10	Destroying wetlands upsets the balance of nature.	1 to 5	Wetland
ATT11	Private property rights are among the most important rights we have.	5 to1 (Reverse)	Private Property
ATT12	Without government involvement, many natural resources would be overused.	1 to 5	Government

revealed three components with eigenvalues greater than 1. These components correspond well with the original attitudinal objects specified. All items dealing with the value of wetlands and their relationship to economic development (items 1, 4, 7, and 10) loaded most heavily on the first component. All items dealing with government involvement in the management of natural resources (items 3, 5, 9, and 12) loaded most heavily on the second component. All items dealing with private property (items 2, 6, 8, and 11) loaded most heavily on the third component. Component loadings and communalities for each item are shown in Table 3.4. Component 1 accounted for 34.0% of the total variance, component 2 for 12.9%, and component 3 for

Table 3.4. Structure matrix showing component loadings of the twelve Likert-type attitude items. The components were extracted with principal components analysis and rotated using promax with Kaiser normalization. The communality, h, represents the amount of total variance in an item that is explained by the three components. The total number of cases (N) was 209.

Item #	Scale	Mean Score (S.D.)	Median	Component 1 Loading	Component 2 Loading	Component 3 Loading	h
ATT1	Wetland	3.621 (1.116)	4	0.767	0.509	0.310	.631
ATT2	Property	1.848* (0.867)	2*	0.383	0.172	0.704	.564
ATT3	Govern.	3.270 (1.147)	4	0.327	0.776	0.428	.623
ATT4	Wetland	3.507* (1.007)	3*	0.742	0.056	0.060	.639
ATT5	Govern.	2.933* (0.976)	3*	0.586	0.648	0.245	.541
ATT6	Property	2.129 (1.016)	2	0.292	0.298	0.725	.533
ATT7	Wetland	3.701* (1.010)	4*	0.840	0.455	0.220	.720
ATT8	Property	2.398 (1.075)	2	0.103	0.343	0.747	.584
ATT9	Govern.	2.967* (0.997)	3*	0.362	0.712	0.186	.522
ATT10	Wetland	3.597 (0.983)	4	0.714	0.441	0.350	.545
ATT11	Property	1.758* (0.891)	2*	0.005	0.183	0.495	.268
ATT12	Govern.	3.185 (1.019)	3	0.230	0.777	0.295	.616

*Value represents mean or median after reverse coding.

9.7%. Together, the three components accounted for more than half of all variance (56.5%). Both enrollees and non-enrollees were included in the analysis, and the total number of cases was 209.

Based on the PCA, items 1, 4, 7, and 10 were combined to produce a *wetland attitude score* (Cronbach's alpha = 0.786), and items 3, 5, 9, and 12 were combined to produce a *government attitude score* (Cronbach's alpha = 0.741). Items 2, 6, 8, and 11 were also combined, producing a *private property attitude score*, but given the low reliability of this scale (Cronbach's alpha = 0.595), these items were also examined individually in the regression analyses described below. Items 2, 4, 5, 7, 9, and 11 were reverse coded before inclusion in their respective scales. Each scale ranges in value from a minimum of 4 to a maximum of 20. Higher scores indicate more

positive attitudes towards the value of wetlands, towards government involvement in the management of natural resources, and towards restrictions on private property rights. Respondents answering fewer than three of the four items on any one scale were not given a score for that scale. If the respondent did not answer one of the four, then the missing response was replaced with the item median score for purposes of computing the scale.

Table 3.5. Descriptive statistics and component loadings for eleven information sources. The components were extracted with principal components analysis and rotated using *varimax* with Kaiser normalization. The communality, *h*, represents the amount of total variance in an item that is explained by the two components. The total number of cases (*N*) was 145.

Information Source*	Mean (S.D.)	Median	Component Loading 1	Component Loading 2	<i>h</i>
INF1: Family, friends, and neighbors	3.011 (0.925)	3	.309	.246	.156
INF2: Newspapers (local)	2.236 (0.870)	2	.764	.268	.656
INF3: Newspapers (state)	2.254 (0.944)	2	.860	.249	.802
INF4: Newspapers (national)	2.033 (0.862)	2	.871	.157	.783
INF5: Local SWCD	3.118 (0.865)	3	.238	.802	.700
INF6: Local trade organizations	2.611 (0.981)	3	.404	.644	.578
INF7: Local OSU extension office	3.166 (0.852)	3	.182	.856	.766
INF8: Local NRCS office†	3.065 (0.952)	3	-	-	-
INF9: State agencies	3.088 (0.950)	3	.258	.781	.676
INF10: National trade/professional org.	2.199 (0.892)	2	.736	.264	.612
INF11: National environmental org.	2.137 (0.949)	2	.531	.382	.428

†Excluded from principal component analysis. See discussion in text.

*Descriptions are abbreviated here. For exact wording, see Appendix B.

Section 3.3.2: Information Sources

To determine the degree to which landowners rely on different types of information sources, respondents were asked to rate eleven sources as having *no importance* (1), *low importance* (2), *moderate importance* (3), or *high importance* (4) in their land management decision-making. A

“don’t know” option was also included and treated as a missing value. Respondents scoring each item identically (e.g., all “moderate importance”) were excluded from all analyses related to information sources based upon their apparent failure to discriminate meaningfully between different sources. Three answered “don’t know” to all items, two failed to answer any of the items, and 17 gave identical answers to all items. For each item, the total number of “don’t know”, blank, or otherwise excluded responses ranged from 28 to 47. These numbers were high relative to most other sections of the questionnaire, suggesting that problems with question design and layout created difficulties for the respondents or that they were not sufficiently familiar with the different information sources to provide meaningful scores. This possibility is also suggested by the frequency of respondents who apparently restricted their answers to just two values (e.g., scoring all sources as either 3 or 4). In any event, it is clear that measurement error, response error, or both may have affected the results related to information sources.

Principal components analysis with *varimax* rotation was applied to the information scores to look for groupings among the different sources. The local office of the NRCS (INF8) was excluded from this analysis because use of the NRCS as an information sources was judged to be addressed adequately with other items on the questionnaire (e.g., contact with district conservationist). Two components with eigenvalues greater than 1 were extracted from the data set. Component 1 accounted for 49.3% of variance and component 2 for 12.2% of variance. Local, state, and national newspapers (INF2-4) loaded most heavily on the first component, while organizational information sources (INF5, 6, 7, and 9), including state and federal agencies with local offices, loaded most heavily on the second component (See Table 3.5). The component loadings for family, friends, and neighbors (INF1) and for national environmental and trade organizations (INF10 and INF11) were more ambiguous.

Based on this analysis, sources 5, 6, 7, and 9 were combined to form an organizational information sources scale (INFORG; Cronbach’s alpha = 0.887). Respondents answering fewer than three of the four items were not given a score for the scale. However, if the respondent rated three of the four sources, then the missing value was replaced with the median score for that source. Information sources 2, 3, and 4 were combined to form a newspaper scale

(INFNEWS; Cronbach's alpha = 0.948). Individuals had to rate two of the three sources in order to receive a score. As above, the missing values were replaced with the median score for that source. Sources 1, 10, and 11 were each examined individually in the regression analyses described below.

Section 3.4: Logistic Regression Analysis of Awareness and Application

Multivariate logistic regression was employed to predict awareness of the WRP and application to the program, both of which were treated as dichotomous variables. Logistic regression is a nonlinear regression technique based on the function,

$$\pi(x) = \frac{e^{\beta_0 + \beta_1 x}}{1 + e^{\beta_0 + \beta_1 x}}$$

where $\pi(x)$ = the probability that the dichotomous variable Y is equal to 1 given independent variable x, and β_0 and β_1 are parameters that correspond roughly to the intercept and slope in linear regression. The *logit* transformation of this function is,

$$g(x) = \ln \left[\frac{\pi(x)}{1 - \pi(x)} \right] = \beta_0 + \beta_1 x$$

which represents the natural log of the *odds* (Prob.(Y=1)/Prob(Y=0)) given independent variable x. The logit is the fundamental output generated by logistic regression. The parameters β_0 in this function is best understood as the log odds that Y=1 when x=0, and β_1 is best understood as the log of the ratio between the odds of Y=1 with x=1 and the odds of Y=1 with x=0 (i.e., a one unit change in x). To make this ratio intuitively easier to grasp, β_1 is often converted to e^{β_1} , which is simply the odds ratio. For example, if $e^{\beta_1} = 2$, then a one unit *increase* in x corresponds to a doubling of the odds that Y=1. On the other hand, if $e^{\beta_1} = 0.5$, then a one unit *decrease* in x has the same effect.

β_0 and β_1 are estimated using the maximum likelihood method. The likelihood function $\iota(\beta)$ can be represented as,

$$\iota(\beta) = \prod_{i=1}^n \pi(x_i)^{y_i} [1 - \pi(x_i)]^{1-y_i}.$$

The log of this equation is differentiated with respect to β_0 and β_1 to produce two likelihood equations, each of which can be set equal to 0 and solved for the values of β_0 and β_1 which give the maximum likelihood of obtaining the y and x combinations observed in the sample. Solving these nonlinear likelihood equations is accomplished through an iterative process.

Advantages of logistic regression include the ability to handle dichotomous outcome variables, and dichotomous, ordinal, categorical, or interval predictor variables. In addition, many of the assumptions that must be met in linear regression are relaxed in logistic regression. In particular, one need not assume homoscedasticity, a linear relationship between the predictor and outcome variables, or normality of the predictor variables. For a fuller explanation of logistic regression and its assumptions, see Hosmer and Lemeshow (2000).

Awareness of the WRP [WRPAWARE] and application to the WRP [WRPAPPLIED] were analyzed separately using logistic regression. Each of these variables was coded as a dichotomous dependent variable (0 = not aware of WRP, 1 = aware of the WRP; 0 = never applied to the WRP; 1 = applied to the WRP) and regressed on relevant predictor variables. Variables were chosen for inclusion in the final multivariate regression models using the method described in Hosmer and Lemeshow (2000). Ideally, one would examine all possible regressions (i.e., all possible combinations of predictor variables), but this approach is impractical for problems involving a large number of potential predictors. The total number of possible regressions is $2^k - 1$, where k is the number of predictors. Thus, with 15 predictors, the total number of regressions would be 32,767. Stepwise regression is one possible solution to this problem, but the shortcomings of this technique, which include both the potential for overfitting the model and for excluding meaningful predictors, are well known (Garson 2008b).

The approach employed here involves screening all potential predictor variables through univariate analyses. Each of the resulting variables found to be significant at the level of $p=0.25$ is considered for inclusion in the final multivariate model. This relatively lax standard is chosen so as to avoid the exclusion of variables whose significance is masked by confounding variables (see discussion in Hosmer and Lemeshow 2002 and Sun et al. 1996). Although use of this

standard does not guarantee the inclusion of all relevant variables (Sun et al. 1996), it is significantly more likely to include them than a stricter threshold, such as $p=0.05$ or 0.01 .

Once ostensibly non-significant variables have been screened out through the univariate analyses, the remaining variables are entered into the regression model in a multivariate analysis. Starting with a model that includes all (or most) of the potential predictors, one works through a recursive process of backward elimination in which variables are removed based upon criteria of significance and meaningfulness. With the elimination of each variable, the coefficients of the remaining variables are examined for large changes. After each elimination, predictor variables removed at earlier stages may be added back in to the model to be rechecked. To avoid overfitting the model, the total number of predictor variable was limited to no more than one for every ten cases of the smaller outcome category (Garson 2008b; Peduzzi et al. 1996)

After a final model has been produced, each of the continuous variables is checked for linearity in the logit. This is done by converting the continuous variable into an ordinal variable, and then comparing the coefficients generated for each of the levels of the new ordinal variable (Hosmer and Lemeshow 2002). If the coefficients increase or decrease in roughly equal steps, then linearity can be assumed. If the coefficients do not show this pattern, then potential transformation of the continuous variable can be considered. Non-linearity can be tolerated in the final model, but it will generally decrease the overall level of fit and thus the amount of variance explained.

The final model is also checked for the presence of potentially influential outliers. In this analysis, outliers whose residuals were greater than 2.58 standard deviations from the mean were subjected to greater scrutiny. The DfBeta scores, which reflect the change in the value of β coefficients resulting from the elimination of individual cases from the regression analysis, were also examined. DfBetas greater than 1 were singled out for greater scrutiny. Multicollinearity is an issue in logistic regression, just as in ordinary least squares regression, but no clear tests such as the variance inflation factor and tolerance have been developed for logistic regression (Garson 2008b). Evidence for multicollinearity was examined through examination of the bivariate

correlations and through indirect signs such as the presence of large standard error values for coefficients.

For the analysis of WRPAPPLIED, but not WRPAWARE, logistic regression was applied to a data set derived from both a census of WRP participants and a stratified random sample of non-participants. In this context, the relative probabilities associated with different predictor variables are meaningful, but the absolute probabilities are not. In other words, the results do not inform us about the absolute probability of participation in the WRP; only the relative probability of participation associated with values of different predictor variables is provided. The approach is similar to that used by epidemiologists to study rare diseases. All infected individuals are retained for the sample and combined with a random sample of non-infected individuals. For further discussion, see Breslow (1996).

Section 3.5: OLS Regression Analysis of Landowner Attitudes

The wetland attitude score and the government attitude score were treated as continuous scale variables and regressed on different independent predictor variables using ordinary least squares regression. The predictor variables included the log of total acres owned, leased, and held in trust (LOGACRES); participation in conservation programs (PROGRAMBIN); three information variables [the organization source scale (INFORG); the family, friends, neighbors score (INFFFN); and newspaper information source (INFNEWS)]; contact with district conservationists of the NRCS [DCCONTACT]; awareness of major wetland projects [AWAREWET]; age of the respondent in decades [AGEDEC]; length of tenure in the county in decades [TENUREDEC]; membership in environmental or conservation organizations [ENVORG]; having visited a wetland for recreational purposes [WETVISIT]; gender [GENDER]; number of outdoor recreation activities [OUTDOORTOTAL]; annual income [INCOME]; percent of income from landholdings [PERCENTINC]; highest level of education attained [EDUCATION]; whether a family member was expected to inherit the landholdings [INHERIT]; and household size [HH#].

The approach to variable selection was the same as that described for the logistic regression analyses. Each attitude index was first regressed against each predictor variable individually.

Those predictor variables showing a significant relationship in these univariate analyses were then considered for inclusion in a multivariate model. Evaluation of the variance inflation factor (VIF) was used to test for multicollinearity. If two variables displayed high VIF scores (i.e., > 4) and multicollinearity was apparent, one of the variables was removed from the model. For each of the final regression models, a histogram of standardized residuals was examined to check for large deviations from normality. To check for heteroscedasticity, plots of standardized residuals against standardized predicted values and against each of the independent variables were examined. Outliers greater than 2.58 standard deviations from the mean were subjected to increased scrutiny.

Section 3.6: Statistical Software

All statistical analyses, including logistic regression, ordinary least squares regression, and principal component analyses were conducted using Statistical Package for the Social Sciences (SPSS), version 16.0.

CHAPTER IV

FINDINGS

Section 4.1: Response Rates

For the nine focal counties in our sample, the total number of landowners selected for the sample was 555. In 27 cases a valid address could not be found or the mail was returned as undeliverable. In two cases non-enrollee respondents were ruled ineligible (see below). The response rate for the remaining sample of 526 eligible enrollees and non-enrollees was 41.1% (216 responses/526 eligible landowners). Ninety-four (17.9%) declined to participate either by phone or by returning a blank questionnaire. The remainder made no response.

Section 4.1.1: Enrollee Response Rates

A total of 94 WRP enrollees were ruled eligible for the study. Valid addresses were available for 82 of these enrollees, and 45 returned questionnaires that were partially or completely filled out. (One enrollee responded to the survey twice, but his first set of responses was excluded from the analysis.) The response rate was thus 54.9% (45 responses/82 enrollees). Eleven enrollees (13.4 %) declined to participate either by phone or by returning a blank questionnaire. The remainder made no response.

Section 4.1.2: Non-enrollee Response Rates

Of the total of 461 non-enrollee questionnaires that were sent out, 15 were returned as undeliverable, reducing the sample of landowners to 446. A total of 173 individuals returned questionnaires that were partially or completely filled out. Two of the respondents were ultimately ruled ineligible because they reported no landholdings. The response rate for the remaining sample of 444 non-enrollees was 38.5% (171 responses/444 eligible non-enrollee landowners).

Eighty-three landowners (18.7%) declined to participate either by phone or by returning a blank questionnaire. The remainder made no response.

Section 4.1.3: Enrollee vs. Non-enrollee Response Rates

Separate chi-square tests for association were performed to check for a relationship between enrollment category (enrollee vs. non-enrollee) and the frequency of eligible responses, declines, and non-responses respectively. No significant relationship was found. The results of the chi-square tests of association are shown in Table 4.1.

Table 4.1. Results of chi-square tests for association between enrollment category (enrollee vs. non-enrollee) and the number of eligible responses, the number of declines, and the number of non-responses.

Type of Response	Chi-Square	d.f.	N	Sig. (2-tailed)
Eligible Responses	0.021	1	553	0.886
Declines	2.251	1	553	0.133
Non-responses	1.052	1	553	0.305

Section 4.2: Demographic Description of Sample

The mean age of the sample was 59.32 (S.D. = +/-13.24 years) (Enrollees: 58.47 +/- 13.25; Non-enrollees: 59.56 +/- 13.27). That is slightly older than the average age of 55.1 reported in the 2002 Census of Agriculture for principal farm operators in the nine focal counties (NASS 2002). However, the census also reported that the average age of farmers in Oklahoma had increased from 1997 to 2002. If this trend has continued, it may account for part of the discrepancy between our 2008 numbers and the 2002 census.

The sample of respondents is predominantly male. Of those reporting a gender, 175 are male (83.7%) and 34 are female (16.3%). This is even more pronounced among enrollees, where only one respondent (2.2%) is female and 44 are male (97.8%). Among non-enrollees, 33 are female (20.1%) and 131 are male (79.9%). In the 2002 Census of Agriculture, 10.4% of the principal operators of farms in the nine focal counties were female and 89.6 % were male (NASS 2002), which indicates that the enrollee sample is more male-biased than the general population of farmers, while the non-enrollee population is less male-biased.

The median annual income category for the entire sample is \$50,000-\$100,000. This is also the median score for both the enrollees and the non-enrollee samples when examined separately. Median education level is “some college.” This is also the median education level for non-enrollees. However, the median education level for enrollees is “bachelor’s degree.” For responses to all demographic questions, see Appendix C.

Seciton 4.3: Predictors of WRP Awareness

For the sample of non-enrollees (both applicants and non-applicants), univariate logistic regression of the binary outcome variable W-RPAWARE on each independent variable produced

Table4.2. Results of univariate logistic regression of WRPWARE on all independent variables subsequently considered for inclusion in the multivariate models. Variables for which significance exceeded ~0.25 are not shown.

Variable	β	S.E.	Wald	d.f.	Sig.	e^{β}	N
PROGRAMBIN	1.276	.469	7.406	1	.007	3.583	158
LOGACRES	.631	.254	6.187	1	.013	1.880	158
AWAREWET	.981	.544	3.248	1	.072	2.667	159
GOVSCORE	-.075	.054	1.922	1	.166	.927	158
DCCONTACT	1.885	.416	20.481	1	.000	6.584	160
AGEDEC	-.151	.124	1.490	1	.222	.860	154
TENUREDEC	.118	.075	2.471	1	.116	1.125	154
OUTDOORTOTAL	.293	.131	5.008	1	.025	1.341	158
DUCK	1.749	.542	10.391	1	.001	5.747	158
ANNUALINC†			4.646	3	.200		140
\$35,000 or less	.099	.479	.043	1	.836	1.105	
\$35,001-\$50,000	-.674	.565	1.421	1	.233	.510	
\$50,001-\$100,000	.520	.439	1.404	1	.236	1.682	
EDUCATION††			5.010	3	.171		156
H.S. Diploma or less	-.302	.500	.366	1	.545	.739	
Some College	.125	.490	.065	1	.799	1.133	
Bachelor's Degree	.704	.503	1.958	1	.162	2.021	
PERCENTINCBIN	.401	.376	1.134	1	.287	1.493	147
INHERIT*	1.288	.803	2.575	1	.109	3.627	132
HOUSEHOLD	.276	.139	3.974	1	.046	1.318	152
ATT8	-.227	.156	2.111	1	.146	.797	158
INF11*	-.239	.197	1.464	1	.226	.788	126

†Entered as a categorical variable. Reference category was “More than \$100,000.”

††Entered as a categorical variable. Reference category was “Graduate Degree.”

*Only considered in final steps of multivariate analysis due to high number of non-responses.

a list of 17 potential predictors. The results of these analyses are shown in Table 4.2. Four of these predictors—age in decades (AGEDEC), length of tenure in the county in decades (TENUREDEC), contact with the district conservationist of the NRCS (DCCONTACT), and duck hunting (DUCK)—are retained in the final multivariate model (see Table 4.3). The overall model is significantly better at predicting WRPAWARE than the null model ($X^2 = 37.095$, d.f. = 4, $p < 0.001$, $N = 151$; Nagelkerke pseudo- $R^2 = 0.294$). The full model predicts awareness correctly 72.8% of the time, compared to 58.9% for the null model. Each of the variables is significant individually, based upon the Wald statistic and the likelihood ratio test comparing the full model with a reduced model lacking the variable. Because age is correlated with length of tenure, and because their individual effects on awareness are opposite in sign, AGEDEC and TENUREDEC are significant only when entered together. Tests for linearity revealed that TENUREDEC may not be linearly related to the logit, but no obvious transformations increased the fit of the model.

Table 4.3. Results of multiple logistic regression of WRPAWARE on four predictor variables: AGEDEC, TENUREDEC, DUCK, and DCCONTACT. (N=151)

Variable	β	S.E.	Wald	df	Sig.	e^{β}
AGEDEC	-.364	.181	4.069	1	.044	.695
TENUREDEC	.274	.108	6.461	1	.011	1.315
DUCK	1.765	.596	8.765	1	.003	5.844
DCCONTACT	1.796	.462	15.108	1	.000	6.026
Constant	.006	.902	.000	1	.994	1.006

Several alternative models were considered, including models that replaced DCCONTACT with other variables related to land operation or to involvement with government agencies. When DCCONTACT is replaced with PROGRAMBIN, LOGACRES, or PERCENTINCBIN, these variables make contributions to the model that approached significance. DCONTACT is retained in lieu of these variables because it contributes more to the overall predictive power of the model and because the likely effects of these alternative predictors are probably mediated by DCCONTACT.

When DCCONTACT was itself analyzed as a dichotomous outcome variable and regressed on individual independent variables, eleven potential predictors were identified ($p < 0.25$) and

considered for inclusion in the multivariate model. Of these candidate variables, LOGACRES, PROGRAMBIN, and AWAREWET are all retained in the final multivariate model (see Table 4.4). The overall model is significantly better at predicting DCCONTACT than the null model ($\chi^2 = 60.212$, d.f. = 3, $p < 0.001$, $N = 158$; Nagelkerke pseudo- $R^2 = 0.474$). The full model predicts awareness correctly 84.8% of the time, compared to 75.9% for the null model. Moreover, each of the variables is significant individually, based upon the Wald statistic and the likelihood ratio test comparing the full model with a reduced model lacking the variable. In an alternate model, LOGACRES was replaced with PERCENTINCBIN. This model was significant, but it did not account for the variation in DCCONTACT as well as the final model retained here.

Table 4.4. Results of multivariate logistic regression of DCCONTACT on three predictor variables: LOGACRES, PROGRAMBIN, and AWAREWET. (N=158)

Variable	β	S.E.	Wald	d.f.	Sig.	e^{β}
LOGACRES	1.724	.411	17.605	1	.000	5.605
PROGRAMBIN	2.559	.672	14.503	1	.000	12.925
AWAREWET	1.746	.732	5.699	1	.017	5.733
Constant	-6.149	1.142	28.972	1	.000	.002

Section 4.4: Predictors of WRP Application and Enrollment

Analysis of WRP application and enrollment is limited to landowners who are aware of the program, since such knowledge is a necessary prerequisite for participation in the program. If those unaware of the program are included in the analysis and WRPAWARE is entered as a predictor variable, there is complete separation in the data and the parameters estimates cannot be estimated. Excluding those who are unaware effectively removes variance attributable to awareness without having to enter WRPAWARE in the regression model.

The four WRP applicants identified among the non-enrollees are grouped together with enrollees in the variable WRPAPPLIED for purposes of regression. This is done because both enrollees and applicants have applied to the program, the difference being that the former have successfully enrolled in the program while the latter have yet to enroll. Two of the applicants reported that their applications were ruled eligible but that no funding was available. A third indicated that his application was still under review. The last did report rejecting an easement

offer, but that individual would be willing to participate in the future if conflicts related to grazing could be worked out. Thus, all applicants are at least potential future enrollees. In any event, including them with enrollees makes more sense than the alternative grouping (i.e., all non-enrollees together, including both applicants and non-applicants). To the extent that enrollees differ systematically from applicants, the sample will be heavily biased towards the former (45 enrollees versus 4 applicants).

The results of univariate logistic regression of WRPAPPLIED on the different independent variables helped to identify several potential predictor variables (see Table 4.5). Each was considered for inclusion in the multivariate model, although several could not be included at the initial stages because of a highly skewed distribution or a high number of non-responses. Both patterns create issues related to sampling adequacy. These variables included DCHOM, DCTRUST, EASOP, and EASEOPSN, GENDER, and ENVORG.

Three variables are retained in the final multivariate model: AWAREWET, PROGRAMBIN, and WETSCORE (see Table 4.6). The overall model is significantly better at predicting WRPAPPLIED than the null model ($\chi^2 = 50.791$, d.f. = 3, $p < 0.001$, $N = 108$; Nagelkerke pseudo- $R^2 = 0.502$). The full model predicts application to the program correctly 81.5% of the time, compared to 54.6% for the null model. Moreover, each of the variables is significant individually based upon the Wald statistic and a likelihood ratio test comparing the full model with a reduced model lacking the variable.

Several alternatives to the final model were considered. A model that replaced WETSCORE with GOVSCORE was significantly better than the null model, and GOVSCORE contributed significantly to its fit. However, this model did not account for the variation in enrollment as well as the final model retained here. Similarly, replacement of AWAREWET with WETVISIT, ENVORG, or OUTDOORTOTAL all produced significant models, but none of these accounted for the variation in WRPAPPLIED better than the final model. It should be noted, however, that the differences were relatively small, and thus many of these other variables could have been

Table 4.5. Results of univariable logistic regression of WRPAPPLIED on all independent variables subsequently considered for inclusion in the multivariable model. Variables for which significance exceeded 0.25 are not shown.

Variable	β	S.E.	Wald	d.f.	Sig.	e^{β}	N
PROGRAMBIN	2.316	.451	26.345	1	.000	10.131	109
LOGACRES	.399	.307	1.697	1	.193	1.491	110
AWAREWET	2.211	.465	22.595	1	.000	9.123	110
EASOP*	1.273	.351	13.110	1	.000	3.570	76
EASOPSN*	.842	.258	10.670	1	.001	2.320	80
WETSCORE	.301	.077	15.291	1	.000	1.351	111
GOVSCORE	.256	.073	12.485	1	.000	1.292	111
INF11	.401	.226	3.141	1	.076	1.493	97
DCCONTACT	Does not converge; parameters cannot be estimated.						
DCHOM*	.776	.338	5.286	1	.021	2.173	68
DCTRUST*	.693	.356	3.787	1	.052	1.999	72
WRPSOURCE	1.465	.481	9.280	1	.002	4.327	95
GENDER*	-2.357	1.064	4.909	1	.027	.095	110
ENVORG*	2.556	.547	21.818	1	.000	12.887	111
OUTDOORTOTAL	.647	.157	17.022	1	.000	1.909	110
DUCK	1.664	.420	15.717	1	.000	5.281	110
WETVISIT	1.907	.435	19.259	1	.000	6.733	109
ANNUALINC†			5.712	3	.127		101
\$35,000 or less	-1.303	.627	4.314	1	.038	.272	
\$35,001-\$50,000	-.427	.714	.358	1	.550	.652	
\$50,001-\$100,000	-.879	.476	3.407	1	.065	.415	
EDUCATION††			7.491	3	.058		109
H.S. Diploma or less	-.883	.561	2.476	1	.116	.414	
Some College	-1.529	.595	6.600	1	.010	.217	
Bachelor's Degree	-1.101	.537	4.203	1	.040	.332	
ATT8	.219	.184	1.412	1	.235	1.245	111

†Entered as a categorical variable. Reference category was "More than \$100,000."

††Entered as a categorical variable. Reference category was "Graduate Degree."

*Only considered in final steps of multivariate analysis due to high number of non-responses or skewed distribution.

Table 4.6. Results of multiple logistic regression of WRPAPPLIED on three predictor variables: PROGRAMBIN, AWAREWET, and WETSCORE. (N=105)

Variable	β	S.E.	Wald	d.f.	Sig.	e^{β}
PROGRAMBIN	1.716	.506	11.489	1	.001	5.561
AWAREWET	1.650	.541	9.305	1	.002	5.206
WETSCORE	0.254	.091	7.864	1	.005	1.289
Constant	-5.497	1.470	13.982	1	.000	.004

plausibly included in a final model.

In general, inclusion of a fourth predictor in the final model raised issues related to sample adequacy. Applying the ten cases per predictor variable rule, the final model for WRPAPPLIED could include as many as five predictor variables (see Garson 2008b). However, it is also necessary to ensure that the covariate patterns created by categorical or dummy independents do not create an excessive number of empty sets or expected counts less than five. Addition of WRPSOURCE contributed significantly to the overall fit of the model; however, the number of cases was not adequate to establish validity by this standard. The situation was even more pronounced with inclusion of GENDER, where sample inadequacy was exacerbated by an extremely skewed distribution. The sample contained only one female enrollee/applicant² and 11 female non-applicants. Thus, the covariate patterns included many empty sets and many expected frequencies less than five. This does not mean that GENDER or WRPSOURCE are not important predictors of WRPAPPLIED, only that larger samples with an adequate number of cases would be required to establish the contribution of these variables with statistical validity.

Section 4.5: Predictors of Landowner Attitudes (WETSCORE and GOVSCORE)

WETSCORE and GOVSCORE were treated as interval level data and regressed on demographic, land operation, and information variables using ordinary least squares regression. Only the sample of non-enrollees was used for this analysis. At the univariate level, the analysis of WETSCORE reveals several potential predictors, including LOGACRES, INF11, TENUREDEC, ENVORG, OUTDOORTOTAL, WETVISIT, EDUCATION, and PERCENTINCBIN, all of which are significant at the level of $p < 0.05$. Several others, including INFNEWS, INFORG, INF10, DUCK, and INHERIT, are significant at the level of $p < 0.25$. Results of the univariate analyses for all predictors are presented in Table 4.7. ENVORG was eliminated from the analysis because of an extremely skewed distribution (only 12 landowners were members of environment or conservation organizations), and the remaining variables were considered for inclusion in a multivariate regression model.

² It should be noted that the population of applicants is probably not as highly skewed with respect to gender as the respondent sample would suggest. Landowners with common female names account for at least 8% of the eligible enrollees in the nine study counties.

Table 4.7. Univariate results of ordinary least squares regression of WETSCORE on demographic, information, and land operation variables. Variables for which significance exceeded 0.25 are not shown.

Variable	B	S.E.	β^*	t	Sig.	N
TENUREDEC	-.284	.110	-.204	-2.592	.010	157
LOGACRES	-0.860	.360	-.185	-2.386	.018	163
PERCENTINCBIN	-2.086	.557	-.294	-3.745	.000	150
INF11†	1.026	.280	.307	3.659	.000	131
ENVORG††	2.496	.895	.215	2.790	.006	162
OUTDOORTOTAL	.499	.191	.203	2.609	.010	161
WETVISIT	2.746	.590	.348	4.651	.000	159
EDUCATION	.685	.228	.234	3.012	.003	159
INFORG†	.155	.091	.147	1.702	.091	134
INFNEWS†	.200	.117	.147	1.707	.090	134
INF10†	.387	.304	.113	1.275	.205	127
INHERIT†	-1.539	.948	-.139	-1.623	.107	135

*Here β represents the standardized OLS regression coefficient, not the logit coefficient.

†Not considered at the initial stages of analysis due to high number of non-responses.

††Eliminated from the analysis due to a highly skewed distribution.

Table 4.8. Multivariate results of ordinary least squares regression of WETSCORE on WETVISIT and PERCENTINCBIN. (N=149)

Variable	B	S.E.	β^*	t	Sig.
PERCENTINCBIN	-1.636	.544	-.231	-3.007	.003
WETVISIT	2.427	.599	.311	4.051	.000
Constant	13.824	.306		45.233	.000

*Here β represents the standardized OLS regression coefficient, not the logit coefficient.

Two variables, PERCENTINCBIN and WETVISIT, are reliable indicators of wetland attitude and thus retained for the final multivariate model of WETSCORE (adj. $R^2 = 0.168$; $F = 15.986$, d.f.=2,146, $p < 0.001$, $N = 149$). PERCENTINCBIN is a negative predictor of WETSCORE, and WETVISIT is a positive predictor. Results of a multivariate model including both are shown in Table 4.8. LOGACRES was also a robust predictor of attitude towards wetlands, but only in the absence of PERCENTINCBIN. The two independent variable are correlated (Spearman's $\rho = 0.479$, $N = 150$, $p < 0.001$). Other predictors, including TENUREDEC, AGEDEC, EDUCATION, INFORG, and INFNEWS are significant in some but not all models considered. Their significance

depends on the presence of other variables and in some cases, whether the sample includes the four WRP applicants or just the non-applicants.

Regression analysis of GOVSCORE at the univariate level reveals several potential predictors, including TENUREDEC, LOGACRES, INFORG, INFNEWS, and INF11, all of which are significant at the level of $p < 0.05$. Several others, including AGEDEC, PERCENTINCBIN, INF1, and WETVISIT are significant at the level of $p < 0.25$. Results of the univariate analyses for all predictors are presented in Table 4.9. In general, information source variables account for more of the variation in GOVSCORE than in WETSCORE, and variables related to outdoor activity (WETVISIT, OUTDOOR, etc.) account for less.

Table 4.9. Univariate results for ordinary least squares regression of GOVSCORE on demographic, information, and land operation variables. Variables for which significance exceeded 0.25 are not shown.

Variable	B	S.E.	β^*	t	sig.	N
AGEDEC	-.318	.187	-.136	-1.701	.091	156
TENUREDEC	-.272	.109	-.197	-2.497	.014	156
LOGACRES	-1.333	.338	-.298	-3.944	.000	162
PERCENTINCBIN	-.943	.564	-.137	-1.672	.097	149
WETVISIT	.834	.610	.109	1.366	.174	158
INF1(FFN)	.390	.274	.120	1.426	.156	142
INFORG†	.281	.084	.279	3.338	.001	134
INFNEWS†	.338	.108	.264	3.140	.002	134
INF11†	1.666	.255	.498	6.531	.000	131

*Here β represents the standardized OLS regression coefficient, not the logit coefficient.

†Not considered at the initial stages of analysis due to high number of non-responses.

In the multivariate models examined, LOGACRES, INFORG, and TENUREDEC were predictors of GOVSCORE in most models. These three variables are thus retained for the final model (adj. $R^2 = 0.243$, $F = 14.274$, d.f. = 3, 121, $p < 0.001$, $N = 125$). Table 4.10 gives the coefficients for each variable. LOGACRES and TENUREDEC are negative predictors of GOVSCORE, and INFORG is a positive predictor. Several alternative models were considered. Replacement of LOGACRES with PERCENTINCBIN yields a significant model, but the final model chosen does a better job of predicting GOVSCORE. This result differs from that for WETSCORE where PERCENTINCBIN is the better predictor. AGEDEC and TENUREDEC each contributes

significantly to the model in the absence of the other, but only TENUREDEC contributes significantly when both are included. INF11 was a significant predictor of GOVSCORE in most models considered, but was ultimately excluded because of its low sample size and heavily skewed distribution.

Table 4.10. Multivariate results for ordinary least squares regression of GOVSCORE on LOGACRES, INFORG, AND TENUREDEC. (N=125)

Variable	B	S.E.	β^*	t	sig.
LOGACRES	-1.147	.339	-.268	-3.382	.001
INFORG	.356	.078	.359	4.575	.000
TENUREDEC	-.313	.106	-.236	-2.961	.004
Constant	11.895	1.251		9.505	.000

*Here β represents the standardized OLS regression coefficient, not the logit coefficient.

Section 4.6: Source of Awareness of the WRP

For enrollees and applicants and for non-applicants, family members, friends, and neighbors are the most important source of awareness about the WRP program (see Figure 4.1). For enrollees and applicants, the next most important source is county and state NRCS employees, followed by mass media (i.e., radio, television, and newspaper advertisements and news stories). The situation is reversed for non-applicants, where the second most important source is mass media, followed by NRCS employees.

In all but one case, the NRCS employees were county, not state, level officials. NRCS website and brochures is fourth for both groups. Other sources mentioned by landowners include the U.S. Fish and Wildlife Service, "game rangers", Ducks Unlimited and the U.S. Army Corps of Engineers. If minor sources are excluded, as well as cases where two different kinds of sources are identified (e.g., mass media and NRCS employee), then there is a significant association between source of awareness about the WRP and enrollment status ($\chi^2=11.703$, $d.f.=3$, $p<0.01$, $N=94$).

As noted in section 3, WRPSOURCE (binary variable equal to 0 for mass media, the NRCS website, and NRCS brochures, and equal to 1 for NRCS employees and for family friends and

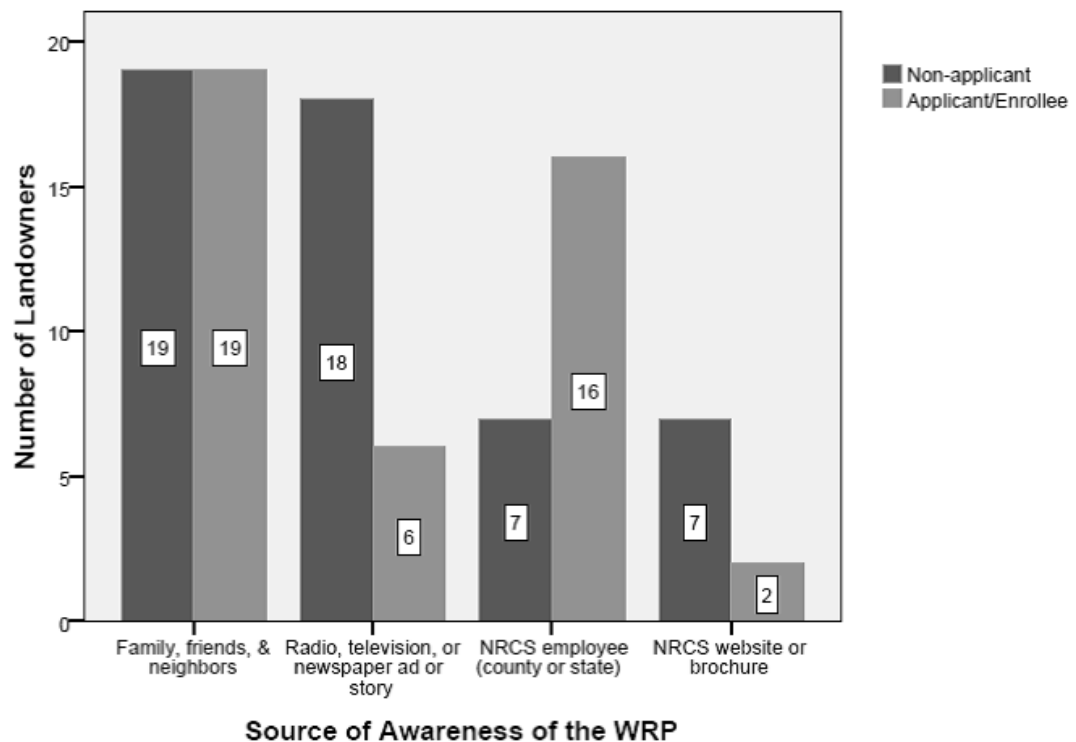


Figure 4.1. Source of awareness of the WRP among enrollees/applicants and among non-applicants. Landowners who selected minor sources (≤ 2 cases) or who selected two different types of source are not included.

neighbors) is a significant predictor of enrollment in univariable and multivariable regression analyses (see Table 4.4).

Section 4.7: Reasons for Applying to the WRP

Figures 4.2 and 4.3 show the mean and median scores for ten factors related to landowner decisions to apply to the WRP. Respondents were asked to rate each factor as having no importance (1), low importance (2), moderate importance (3), or high importance (4). A “don’t know” option was also available. Factors with the highest ratings, on average, are wildlife benefits for the community, personal use of the wetland for recreation, and assistance with restoration, all of which have a median score of 4. Natural beauty/aesthetics (median=3.5), environmental benefits to the community (median=3), and easement payment (median=3) receive relatively high ratings as well. The lowest scores are associated with profit from rental of the land

Fig. 4.2

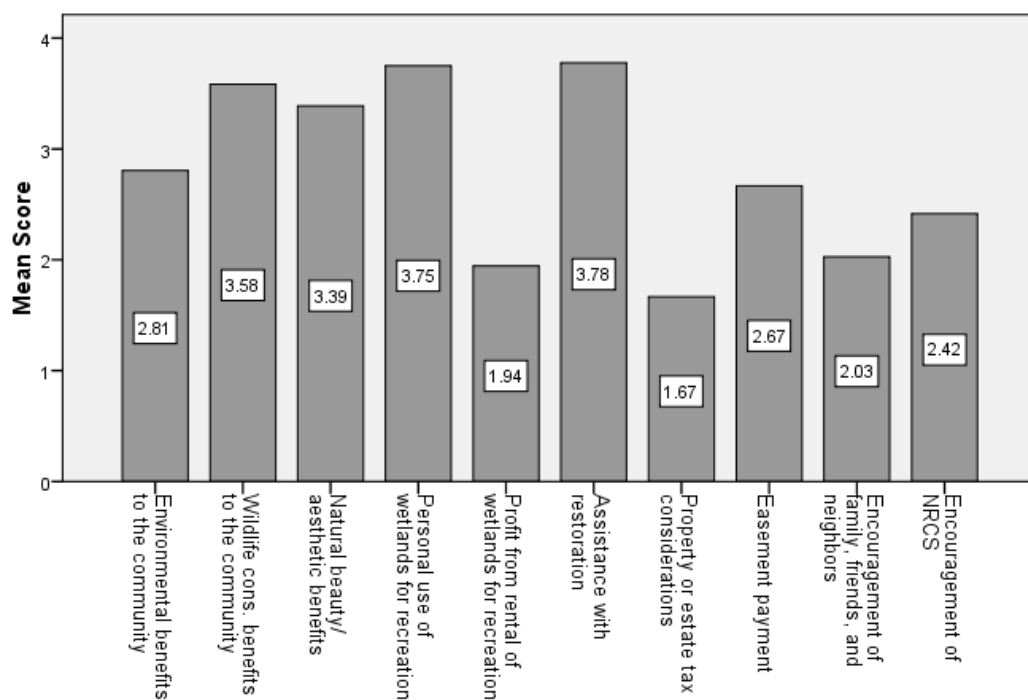
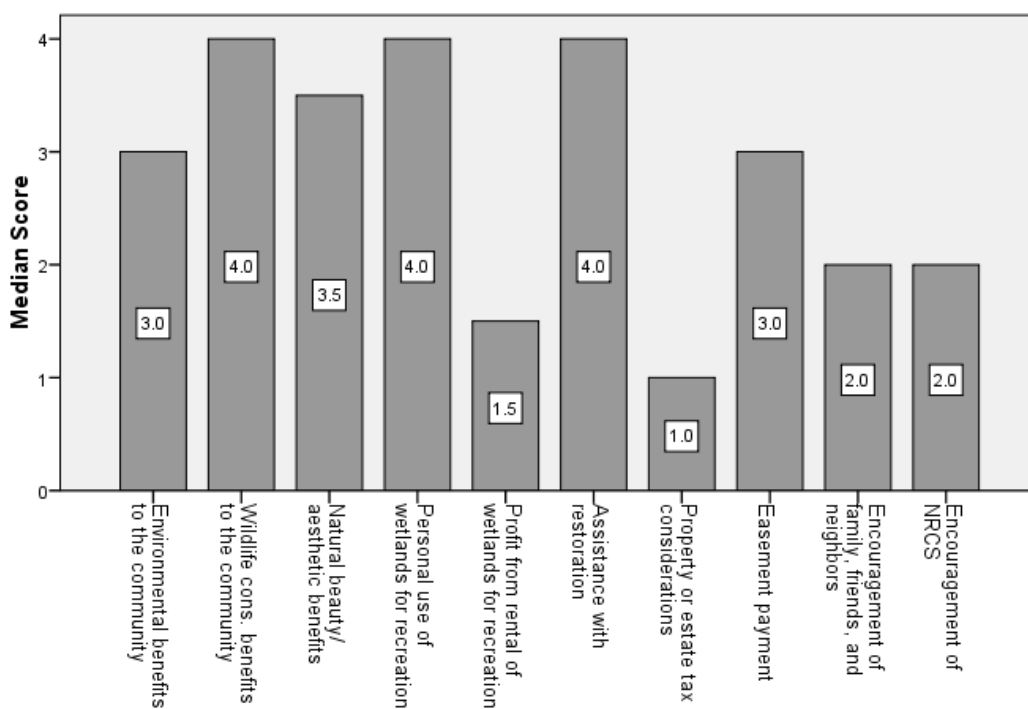


Fig. 4.3



Figures 4.2 and 4.3. Mean and median scores for the influence of each of ten factors on the decision to apply to the WRP. Respondents were asked to rate the factor as having no importance (1), low importance (2), moderate importance (3), or high importance (4) in their decision to apply.

for recreation (median=1.5), property and estate tax considerations (median=1), and encouragement of the NRCS (median=2) and of family, friends, and neighbors (median=2). In general, these results suggest that the most important reasons for applying to the WRP relate to wildlife benefits and the use of the wetlands for recreation. All of the top four factors can be related to wildlife and recreation. Financial gain from the program, either through easement payments or profit from land rental, may be important to applicants as well, but the overall rating for these factors is lower.

This finding is consistent with the landowner responses to the open-ended question asking them to expand on their reasons for applying. Of the nineteen individuals who answered this question, 11 mentioned wildlife benefits and hunting. Only two individuals mentioned financial gain and one of those landowners also mentioned wildlife benefits as well. Other reasons mentioned include keeping the land in the family and preventing oil and gas drilling. Several made general normative statements about participation in the program. For example, one landowner declared, "It's the right thing to do."

Section 4.8: Satisfaction with the WRP and WRP Implementers

In general, WRP enrollees rated their experience with the program highly. The median ratings for overall experience, communication with the NRCS, and assistance provided by the NRCS are all 3 (i.e., good). The modal scores are 4, 3, and 4 respectively. Figures 4.4, 4.5 and 4.6 give the distribution of scores for each measure of satisfaction. In their qualitative comments about the program, many enrollees praised the NRCS, the assistance that was provided, and the wetlands produced on their property. Out of 31 responses, eight made a general positive statement and one made a general negative statement. Thirteen praised the NRCS or specific employees of the NRCS, and four criticized the agency. Two complimented Ducks Unlimited, while three were extremely critical. With respect to specific issues and problems, the length of the application and enrollment process and the level of communication with the NRCS (or Ducks Unlimited) were mentioned most often. Nine landowners bemoaned the paucity of information provided during different phases of the process. One landowner reported having lost crops due to lack of guidance about what was permissible to do with a future WRP site. On the other hand, three

Fig. 4.4

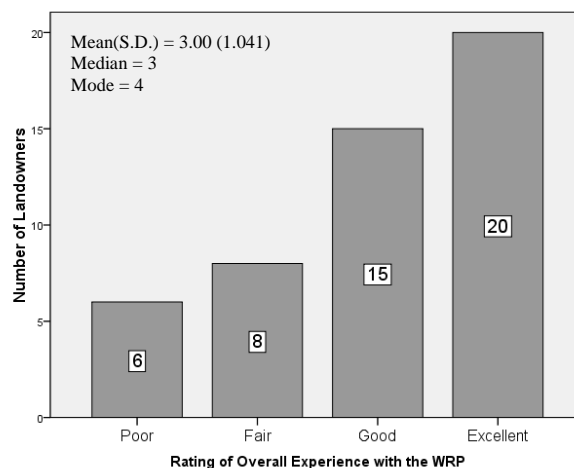


Fig. 4.5

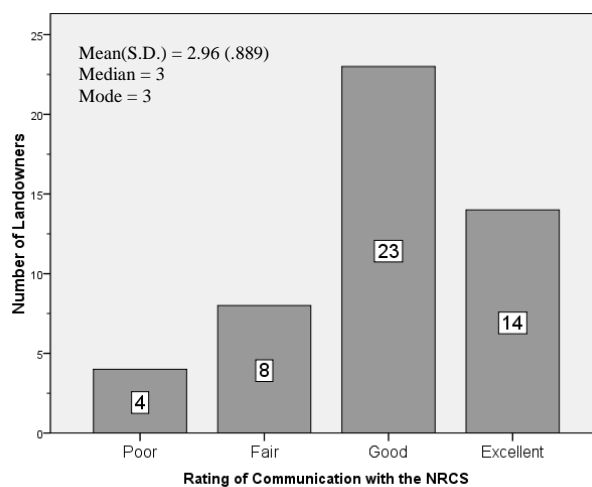
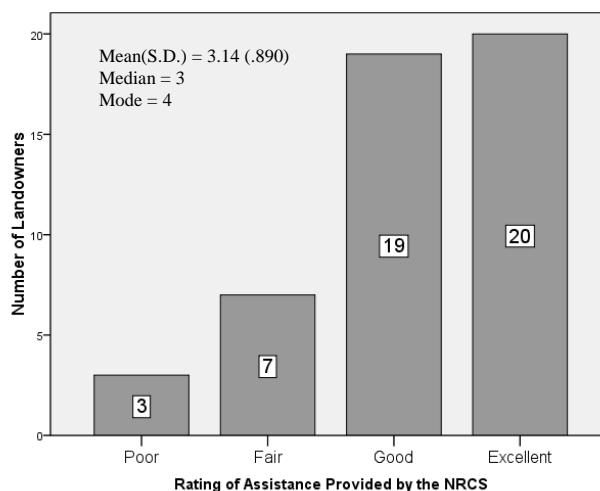


Fig. 4.6



Figures 4.4, 4.5, and 4.6. Landowner ratings of different aspects of their involvement with the WRP: overall experience (4.4), communication with the NRCS (4.5), and assistance provided by the NRCS (4.6). The sample includes all 45 enrollees and all 4 applicants.

enrollees praised the level of communication with the NRCS. Other issues mentioned include conflict over grazing, and in McCurtain County, four individuals mentioned disputes related to the planting or harvesting of timber.

The four non-enrollee applicants included in the sample gave lower ratings across the board to the WRP on all three measures of satisfaction. This group accounted for three of the six individuals who rated their overall experience with the program as poor. The fourth applicant rated his experience as fair.

Section 4.9: Reasons for Refusal to Apply or Enroll in WRP

Non-applicants who were aware of the WRP and who reported having considered whether to apply were asked to rate the importance of ten factors in their decisions not to apply or to delay application. No importance was scored as 1, low importance as 2, moderate importance 3, and high importance 4. A “don’t know” option was also available, and it was scored as a missing value. Respondents were also given the chance to expand upon any of their reasons for not applying.

Thirty-three landowners responded to at least one item. Two of these were excluded for giving identical responses to all items. Many of the remaining landowners responded “don’t know” to multiple factors, and thus the number of valid responses per factor ranged from 21 to 27. Reluctance to sell land/rights to the government [median=4] and restrictions on land use [median=3] were given the highest ratings of all the factors. Following close behind were lack of suitable areas [median=3] and lack of information [median=2]. The lowest scores were given to discouragement by the NRCS and by family, friends, and neighbors. The mean and median ratings for each of the ten factors are displayed in Figures 4.7 and 4.8.

Several of the landowners who expanded upon their reasons for not applying expressed the belief that they did not own land that was suitable for the program. In many cases, it is evident that the landowners believed that they had to currently own wetlands to participate in the program. Other landowners cited a distrust of government programs and regulation, skepticism about the value of wetlands, and specific restrictions that were unpalatable. These comments are

Fig. 4.7

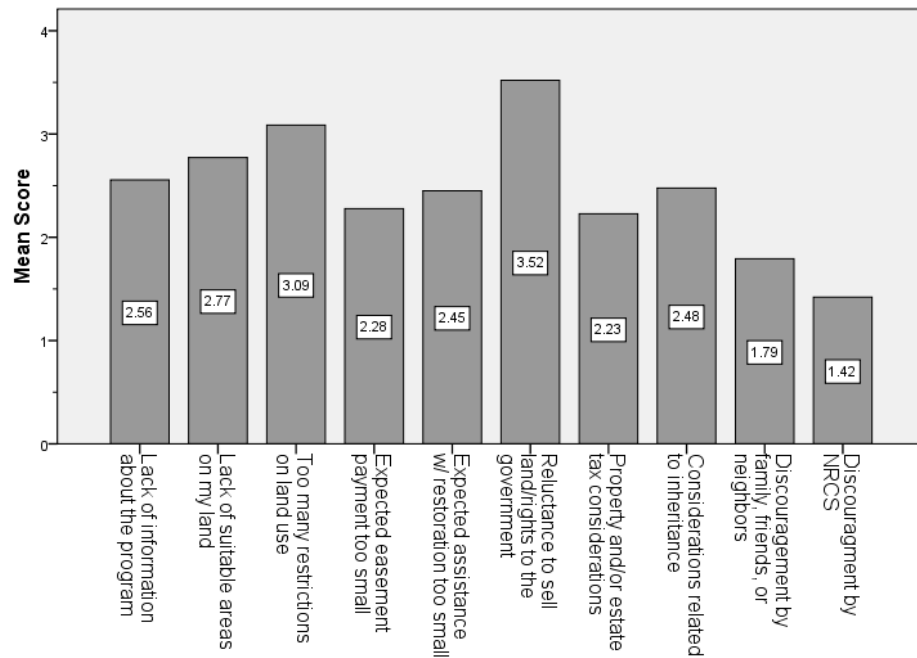
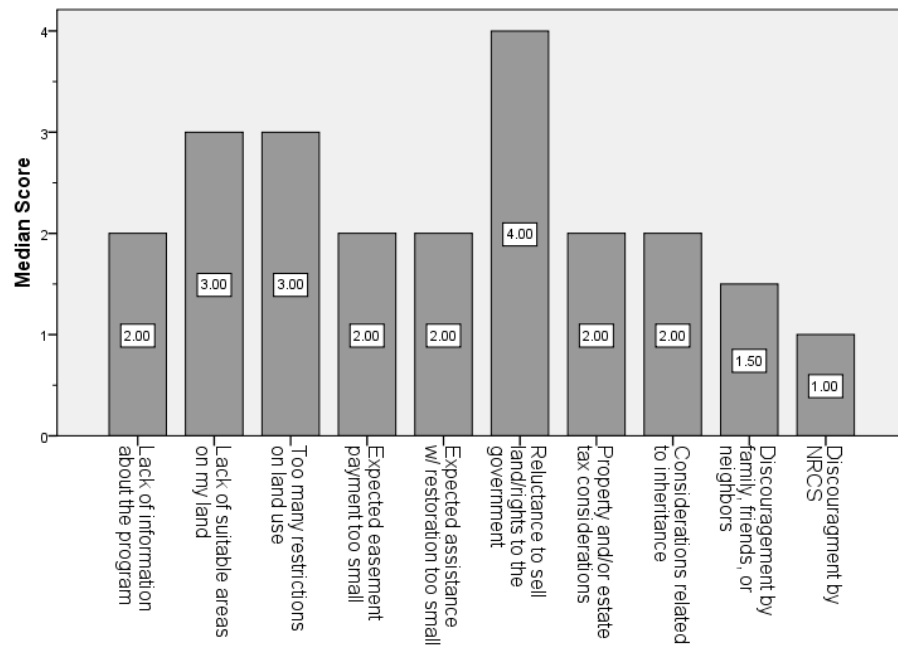


Fig. 4.8



Figures 4.7 and 4.8. Mean and median ratings of ten factors influencing the decision not to apply. Non-applicant landowners who were aware of the WRP and reported having considered whether to apply to the program were asked to rate each factor as having no importance (1), low importance (2), moderate importance (3), or high importance (4) in their decisions. The number of valid responses ranged from 21 to 27. The response “don’t know” was scored as a missing value.

consistent with the idea that control of private property and an unwillingness to relinquish control to the government are important factors in resistance to the program.

Only one of the four applicants in the sample turned down an easement offer, and thus made an affirmative decision with respect to enrollment. In his comments on this decision, the landowner cited the restrictions that would have been placed on his land if he had accepted the offer. In particular, he was concerned about being prevented from grazing on the WRP site. The three other applicants had not been offered easement contracts and thus had not made any decisions with respect to enrollment. Two of these applicants report that they were ruled eligible but that no funds were available for their projects. The third reported that his application was being reviewed.

CHAPTER V

CONCLUSIONS

The results presented in Chapter IV tell a surprisingly coherent story about the path to participation in the WRP. Any conclusions drawn must be limited to the nine focal counties included in the survey population. Moreover, the lack of availability of WRP applicant data constrains our ability to separate the decision to apply from the decision to accept an easement offer and enroll. But insofar as the data speak, the results offer clear insights into both awareness of, and participation in, the WRP.

Of particular importance are variables related to personal contact with the NRCS, the size and importance of the land operation, and attitudes and experience touching on wetlands and government (see Figure 5.1). Landowners with larger and more economically important operations and those benefitting from experience with wetlands, with the NRCS, or both are more likely to become aware of the WRP. At the application and enrollment stage, those with more favorable attitudes towards wetlands and the government and those with relevant experience with wetlands or with agency officials or conservation programs are more likely to apply to the program. Those choosing to apply are often motivated primarily by the potential benefits for wildlife and recreation. Those foregoing involvement in the program often do so because of perceived ineligibility, concerns about land use restrictions, or a negative overall attitude towards wetlands or government. Economic considerations are not rated as highly, but their relative importance is difficult to determine without more data on applicants and their responses to economic factors such as land values and assessed easement values. The significance of these findings are explored in more detail below.

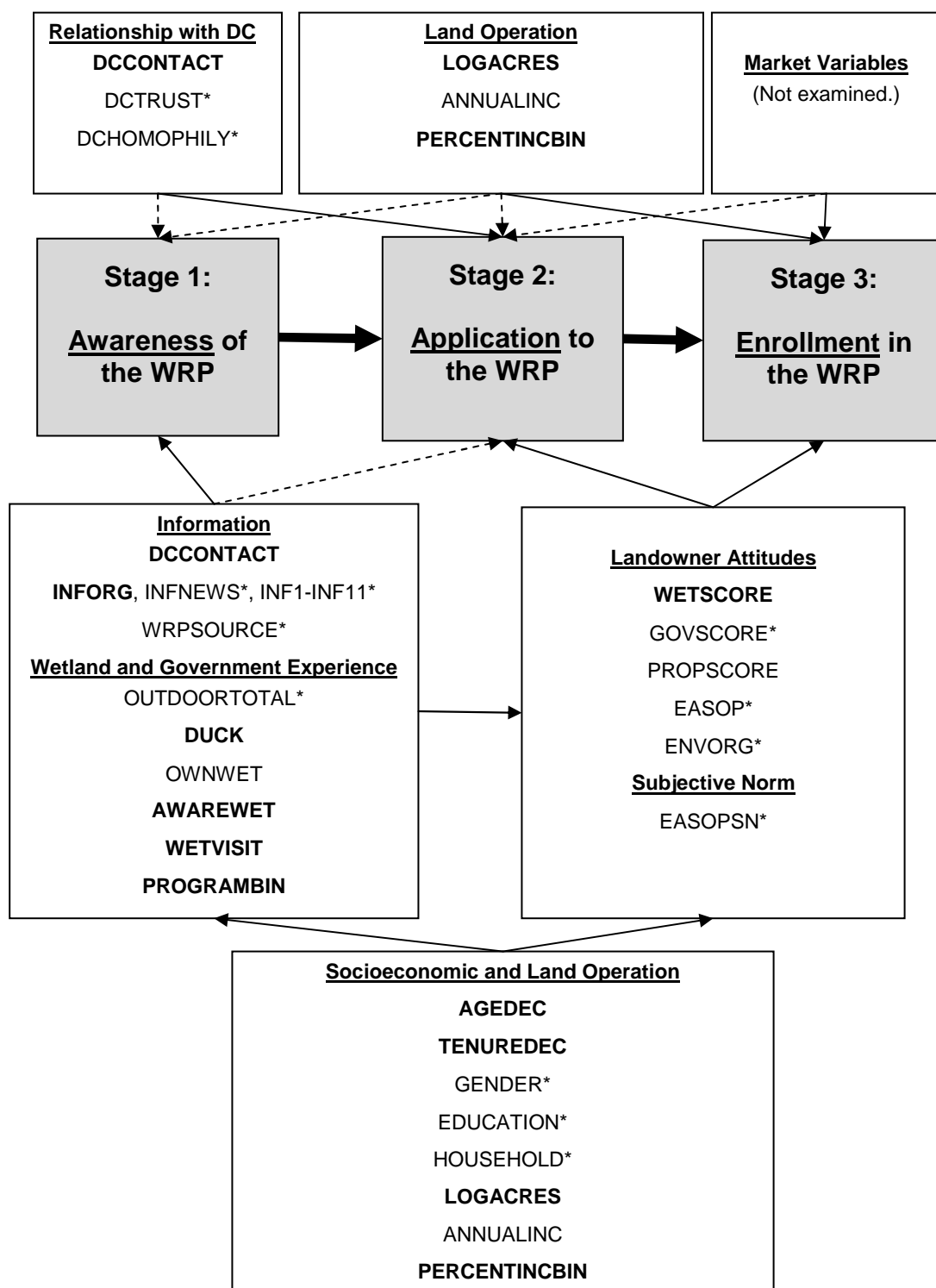


Figure 5.1. Diagram of WRP participation model. Variables included in at least one multivariate regression model are displayed in bold. Variables marked with an asterisk (*) were significant in univariate analyses, but not retained in any of the final multivariate models.

Section 5.1: Awareness of the WRP

Stage one of participation--becoming aware of the program and thus the potential for participation--is predicted by tenure in the county (TENUREDEC), duck hunting (DUCK), and contact with the district conservationist (DCCONTACT). The effect of tenure is apparent after controlling for age (AGEDEC), which is negatively correlated with awareness and positively correlated with tenure.

A causal interpretation for each of the major predictor variables can be plausibly advanced. Given the purposes of the WRP, it is easy to see how duck hunting could lead to awareness of the program. Involvement in duck hunting is likely to put one into contact with other hunters, conservation organizations, and game management officials who are involved with, or aware of, the program. In Oklahoma, the NGO Ducks Unlimited has been heavily involved in the implementation of the WRP by assisting with the restoration of wetland hydrology on at least 10,353 acres and helping to seed at least 5,529 acres of bottomland hardwood forest (Ducks Unlimited 2008). The NRCS in Oklahoma also coordinates the implementation of the WRP with government agencies, such as the U.S. Fish and Wildlife Service and the Oklahoma Department of Wildlife Conservation, who oversee similar conservation programs (e.g., Partners for Fish and Wildlife). WRP applicants who are judged to be unsuitable for the WRP are often referred to one of these other agencies (NRCS, unpublished data). One individual in our survey reported learning about the program through Ducks Unlimited and the U.S. Fish and Wildlife Service, and a second attributed his knowledge to a "game warden."

It is also easy to see how length of tenure in the county might be related to awareness of the program. Individuals who have lived in their county of residence for a long time have had the opportunity to develop an extensive social network, including neighboring landowners, local extension agents, government agencies, and others with knowledge of programs such as the WRP. Moreover, these individuals may have more experience, on average, with land ownership and management than relative newcomers. Some individuals reporting a short tenure in the county may have extensive connections in the county and extensive land management experience. However, many others will be new to the community and perhaps new to land

management. These individuals will require time to develop both the knowledge and the social connections enjoyed by their more established peers.

Previous research on landowner experience and length of tenure is ambiguous with respect to the effects on conservation behavior. Pease et al. (1997) report that 40% of landowners participating in three wetland conservation programs, including the WRP, had owned their land for ten years or less. Prokopy et al. (2008) found that four studies had reported a negative relationship between landowner experience and use of BMPs, two a positive relationship, and eight no relationship. Kabii and Horwitz (2006) argue that landowners with a long history of land ownership are less open to easement programs because they are more likely to trust in their own experience and knowledge. On the other hand, Knowler and Bradshaw (2007) found that a positive relationship was more common in their review of conservation agriculture internationally. Four of the studies reviewed found a positive relationship, five found no relationship, and none found a negative relationship.

In any event, we are concerned here not with adoption or participation decisions per se, but with awareness of a program. Although awareness of conservation practices and programs is a necessary prerequisite to participation, the effect of any one variable such as length of tenure is not necessarily the same for both awareness and participation. It is worth noting that TENUREDEC was a negative predictor of wetland and government attitudes (see below).

The case for a causal relationship with awareness is perhaps clearest for DCCONTACT where it is obvious that contact with the change agent responsible for implementation of a program will often result in becoming aware of that program. We have direct evidence of this effect from the number of individuals who specifically reported learning of the WRP directly from local officials of the NRCS (See Figure 4.1). These findings accord well with the diffusion model, which predicts the importance of change agents during the early stages of adoption (Rogers 2003: 291). It also accords well with previous findings in studies of the WRP (Pease et al. 1997) and of conservation behavior more broadly (Kraft et al. 1996; Loftus and Kraft 1996; Lockeretz 1990; Lohr and Park 1995; Prokopy et al. 2008). However, it should be noted that we cannot eliminate the possibility

that awareness of the WRP was, in some cases, a cause of contact with DCs rather than an effect. For example, an individual landowner might have learned about the program and then sought out the DC for further information.

The lack of significance of most information source variables, even in univariable analyses, is puzzling given both previous research (Rogers 2003; Prokopy et al. 2008; Kabii et al. 2008) and the intuitive appeal of a connection between what a landowner knows and what sources of information he or she uses. It is possible that measurement error resulting from problems with the design of the information source questions is responsible for the failure to find a significant relationship. A high number of respondents skipped this section or apparently failed to discriminate meaningfully between the different sources. Other respondents appeared to have trouble applying the four point scale to each source and used only a portion of the scale. On the other hand, it may be that the lack of a significant relationship is a meaningful result and not the result of measurement error. For example, the WRP may be sufficiently well established that landowners have a good chance of learning about the program through many different information sources, and thus awareness does not depend on a specific information type, such as organizational information sources.

Section 5.1.1: Predictors of Contact with District Conservationists

Contact with the DCs is itself predicted by number of acres owned (LOGACRES), participation in other conservation programs (PROGRAMBIN), and awareness of large wetland projects (AWAREWET). Landholders who own more land, who have participated in other conservation programs, and who are aware of large wetland projects are more likely to be in contact with the DCs and thus more likely to be aware of the WRP. The effect of participation in other conservation programs is not surprising given that many of the programs identified by the questionnaire (e.g., CRP, FRLP) are administered by the NRCS. Participating in these programs would be expected to put one in contact with the DCs. With respect to awareness of wetland projects (AWAREWET), it is not clear whether this is a consequence of contact with the local DC a cause of contact, or merely an association. Further research would be necessary to tease out

whether landowners become aware of the wetland projects before contact with the DCs or whether that awareness is attributable to the DCs.

The importance of the size of landholdings is predicted by the diffusion model (Rogers 2003), and is supported by some previous research on conservation behavior (Kabii and Horwitz 2006; Knowler and Bradshaw 2007; Prokopy et al. 2008). However, as noted previously, Pease et al. (1997) found a contradictory result for participation in three wetland conservation programs, including the WRP. In their study, the majority of program participants were small- to medium-sized landowners. In a later survey, the USDA (2006) reported that farmers with holdings between 101 and 1000 acres participated in the WRP at lower rates than farmers with smaller or larger landholdings, but the significance of this result is questionable given the small numbers of WRP participants identified in their sample of farms (less than 20 in a sample of 12,418).

Of course, when comparing any of these results with those for DCCONTACT or WRPAWARE, we must keep in mind the distinction between awareness of a program and participation in that program raised in the previous section. To the extent that size of landholdings serves as a positive predictor of conservation behavior, the connection has often been attributed to larger landowners having a greater capacity or willingness to implement new practices and to participate in programs (Prokopy et al. 2008; Knowler and Bradshaw 2007). Here, we can hypothesize that the effect on contact with DCs, and by extension awareness of the WRP, may be derived from larger landowner's being better connected to other landowners, having greater economic ties to the land, and having more reason to contact the NRCS for help with land management. It is interesting that, in an alternative model, the percent of annual household income derived from the land was also a good predictor of DCCONTACT. This makes sense if both this variable and the size of landholdings reflect the land's relative economic importance to the landowner.

Section 5.2: Application and Enrollment in the WRP

Stage 2 of participation, application to the WRP (WRPAPPLIED) is predicted by wetland attitudes (WETSCORE), participation in other conservation programs (PROGRAMBIN), and awareness of large wetland projects (AWAREWET). Alternative models incorporated government attitudes as

a predictor of WRP applications, suggesting that both attitudes towards wetlands and towards government may be important. The source of knowledge about the WRP (i.e., mass media versus personal contact) and gender may be important predictors as well, but the small number of valid responses and/or a skewed distribution of responses make inclusion of these variables inappropriate.

The importance of attitudes in influencing conservation behavior is supported by previous research. Attitudes towards the environment and conservation have been tied to conservation behavior in a number of studies (Lynne et al. 1988, and Lynne and Rolla 1988; Napier et al. 1988; Lohr and Park 1995; Napier et al. 1995; Diagne 1996; Cary and Wilkinson 1997; Knowler and Bradshaw 2007; Prokopy et al. 2008). The importance of attitudes towards government has been demonstrated in previous research as well (Kraft et al. 1996; Kabii and Horwitz 2006). This research would also lead one to expect attitudes towards private property to influence participation in the WRP (Kabii and Horwitz 2006), but the relationship is not significant for our sample of landowners. It may be that this finding is related to problems with our index of private property attitudes. The mean for PROPScore is substantially lower than for WETScore or GOVScore, and it also shows less overall variation. This might reflect more uniformity of opinions related to private property, but it might also mean that the attitude statements chosen simply did a poor job of revealing attitude differences.

The theory of planned behavior predicts that opinions about participation as well as the subjective norm with respect to participation will be important predictors of application to the program (Ajzen and Fishbein 1980; Ajzen 1991). In keeping with these expectations, a landowner's opinion of easement programs and his or her perception of the opinions of family friends and neighbors are good predictors of WRPApplied. However, the high number of missing values (i.e., no response or "don't know") precludes inclusion of these variables in the multivariate model and casts doubt on any conclusions that might be drawn. Luzar and Diagne (1999) found that attitudes toward WRP participation were a significant predictor of participation in Louisiana landowners, but they also found that the subjective norm did not contribute significantly to the model. This result, as well the low rating given to "encouragement of NRCS" and

“encouragement of family, friends, and neighbors” as factors in participation decisions (see Figures 4.2 and 4.3), provide further grounds for caution, especially with respect to the influence of the subjective norm.

The importance of the awareness of wetland projects was suggested by NRCS officials who attributed increased interest in the WRP in certain regions to presence of large wetland projects in those regions (e.g., Hackberry Flats in Tillman Co.). The results reported here provide qualified support for this belief given that awareness of wetland projects is a predictor of both contact with district conservationists and with applications to the WRP. As noted previously, interpretation of this result must take into account the possibility that awareness is a result of contact with the DC and not a cause. It is also possible that the apparent influence of awareness of wetland projects can be attributed to correlation with a third variable, such as general environmental attitudes.

Participation in other conservation programs is a positive predictor of application to the WRP, an effect that is distinct from any effect upon awareness of the program. Many studies have shown that participants in the WRP are also frequently participants in other conservation programs. For example, Eisenhert (2005) reports that individuals judged more likely to participate in future wetland conservation programs were currently participating in conservation programs.

Our understanding of the predictors identified by the regression analysis is complemented by information on the declared motivations of both those landowners who considered, but ultimately rejected, applying, and of those landowners who did apply to the program. The most important reasons identified by the former group can be divided into three general categories. The first category includes reasons related to perceived ineligibility. A number of landowners in our sample believed that they did not have land suitable for the WRP. In many cases, this apprehension may have been entirely accurate. Although the sample included only landowners with hydric soils, there was no efficient way to guarantee that every landowner owned wetlands or former wetlands suitable for inclusion in the WRP. However, it is likely that some of these landowners were overlooking the presence of former wetland areas on their land or did not

understand that such areas can be eligible. The second category includes broad objections to the value of wetlands or to the involvement of government in the management of natural resources. This category is exemplified by comments such as, "When a duck or a snail has more priority [sic] than human's [sic] we all suffer!" and "Government is too wasteful." Such comments provide another line of evidence for the importance of WETSCORE and GOVSCORE. The third category includes objections tied to specific restrictions on land use, such as prohibitions on grazing or timber harvesting. The salience of such restrictions is both intuitively meaningful and supported by previous investigations of the WRP and other wetland conservation schemes (Forshay et al. 2005; Eisen-Hecht 2005; U.S. GAO 2006).

Among participant landowners, ratings of the importance of different factors in decisions to apply to the WRP suggest that wildlife conservation and outdoor recreational activities, especially duck hunting, are particularly important in motivating application to the WRP. Wildlife conservation benefits to the community, restoration assistance, and personal use of the wetland for recreation were all rated highly by applicants and enrollees. And in their qualitative comments, eleven of the nineteen responses cited wildlife conservation, recreation, or both. Only two respondents mentioned the easement payment in their responses. This result is in keeping with some studies that have examined the motivations of WRP participants (Schnepf 1994 as cited in Despain 2005; Pease et al. 1997; Blumenfeld 2002), but not all. The U.S. GAO (2006) found that financial incentives were more frequently cited than a "personal interest in conservation." The relative importance of financial and non-financial factors in landowners' participation decision is difficult to determine unambiguously given the potential for measurement error. Landowners may be more likely to express non-financial motivations for enrollment because such motivations are considered more socially acceptable. Hints of this bias can be gleaned from the sometimes contradictory responses given by landowners. For example, landowners have sometimes rated the importance of easement payments as low, while also indicating that participation was dependent upon the easement payment (e.g., Pease et al. 1997; Blumenfeld 2002). It is interesting that the U.S. GAO report was based upon a telephone survey, a mode of delivery

which is known to suffer from bias related to the social desirability of responses more than self-administered surveys (Dillman 2007: 226).

Section 5.3: Predictors of Landowner Attitudes

The multivariable OLS regression reveals several predictors of landowner attitudes. The number of acres owned (LOGACRES) and the proportion of income derived from the land (PERCENTINCBIN) are important negative predictors of wetland and government attitudes, and by extension application to the WRP. With respect to wetland attitudes (WETSCORE), PERCENTINCBIN is the better predictor and thus included in the final model, while for government attitudes (GOVSCORE), LOGACRES is the better predictor and thus retained for the final model. For each scale, the difference between the influences of the two predictors is small, and the contrasting results may be related more to idiosyncrasies of the sample than to meaningful differences. The negative relationships reported here stand in contrast to the predictions of the diffusion-farm structure model (see discussion in Section 5.1), but they are consistent with some previous findings related to participation in the WRP and similar programs. Pease et al. (1997) reported that the majority of participants in the three programs they studied were medium to small landholders. And both Pease et al. (1997) and Blumenfeld (2002) found that the majority of participant landowners derived less than 20% of income from the farming.

Unsurprisingly, INFORG is also a positive predictor of GOVSCORE in our model, indicating that those who rely more on organizations, including government agencies, for land management decisions display more positive attitudes towards government involvement in the management of natural resources. TENUREDEC is a negative predictor of GOVSCORE. Its effect on attitudes is thus opposite to its effect on WRPAWARE.

WETVISIT is a positive predictor of WETSCORE. Landowners who have had the direct experience of visiting a wetland for recreation display more positive attitudes towards wetlands. This result, as well as the significance of OUTDOORTOTAL in univariate analyses and of DUCK in multivariate analyses of awareness, point clearly to the importance of direct experience with nature in general and wetlands in particular. These patterns are consistent with previous

research into the relationship between attitudes and outdoor recreation (Dunlap and Heffernan 1975; Theodori et al. 1998; Teisl and O'brien 2003).

Some variables that are significant in univariable analyses, but not included in the final multivariable model, have been the subject of much previous work on environmental attitudes. For example, level of education has commonly been examined in attitudinal research and found to correlate positively with concern for the environment (Van Liere and Dunlap 1980, Jones and Dunlap 1992,). Our univariate results for education are consistent with this research. On the other hand, some variables, such as age, that have commonly been associated with environmental concern (Van Liere and Dunlap 1980, Jones and Dunlap 1992), are not significant predictors of attitudes in our sample. Age serves as a negative predictor of awareness of the WRP, but shows only marginal significance as a predictor of government attitudes ($p=0.101$) and no relationship at all with wetland attitudes. It should be noted, however, that the negative relationship between length of tenure and government attitude might be attributable in part to the effects of age in that older landowners, *ceteris paribus*, will have lived longer on average in their county of residence.

Several different information source variables, including INFNEWS and INF11 (national environmental organizations) are significant positive predictors of GOVSCORE in the univariable regression. Although the results for INF11 (and INFORG) make good intuitive sense, the relationship between INFNEWS and attitudes towards government is not clear. It may be that use of newspapers is correlated with another relevant variable such as income or education.

Section 5.4: Variables with Multiple Effects

Several variables are significant predictors at multiple points in the participation model. Some have positive effects at two or more points. PROGRAMBIN and AWAREWET predict both DCCONTACT and WRPAPPLIED. It may be that the connection of these variables with WRPAPPLIED is mediated by their influence on DCCONTACT. For example, those who are in contact with their DC may learn more about the program's benefits from such contact and be more favorably disposed to apply. Unfortunately, DCCONTACT cannot be included as a

predictor in this model because its inclusion would present both conceptual and statistical difficulties. Contact with the district conservationist necessarily follows from the decision to apply, whether or not it has preceded that decision.

Of more interest are the instances in which the variables examined have opposite effects at different points in the participation model. For example, although LOGACRES and PERCENTINCBIN are positive predictors of DCCONTACT and by extension awareness of the WRP among non-enrollees, they are negative predictors of either wetland or government attitudes. Similarly, TENUREDEC is a positive predictor of awareness of the WRP among non-enrollees, but a negative predictor of government attitudes and by extension participation in the program among those that are aware.

Although we must be careful not to over-interpret these results, they clearly suggest that landowners with a more negative attitude towards wetland value and towards government involvement in the management of resources are over-represented in the population of landowners who are in contact with DCs and aware of the WRP. This suggests that smaller landowners and those deriving less of their annual income from the land are both less likely to come in contact with the NRCS and more likely to hold attitudes that are favorable to participation. Although Pease et al. (1996) and Blumenfeld (2002) only examined program participants or applicants, the relatively small size of landholdings and the low percent of income derived from farming in their samples is consistent, at least partially, with this hypothesis.

Section 5.5: Satisfaction with the WRP

Overall, satisfaction among enrollees is relatively high. As noted in the preceding chapter, many enrollees are full of praise for the WRP, the NRCS, and the wetlands projects realized on their land. Ratings are high for both assistance provided, level of communication, and overall experience. However, the modal response is “excellent” (4) for overall experience and for assistance, but only “good” (3) for communication. In conjunction with the responses of enrollees to open-ended questions, this suggests one of the potential weaknesses of implementation of the WRP: a perceived lack of information about the status of applications that are being reviewed

and of projects that have yet to be realized. A corollary of this issue is concern about not having input into the design of the WRP project. Concerns about input into wetland design and information access have surfaced in other studies examining satisfaction with the WRP (e.g., Schnepf 1994 as cited in Despain 2005; Blumenfeld 2002; Forshay et al. 2005,).

The four non-enrollee applicants in the sample rated their experience with the WRP much lower than did enrollees. Whether these four applicants are representative of the population of applicants who never enroll in the program cannot be determined from this data set. It may be that applicants with a particular animus against the program, those who felt mistreated or those who had quarreled with the NRCS or Ducks Unlimited were more motivated to reply to the questionnaire than were those who were relatively satisfied. It may also be that, in general, applicants who do not become enrollees, and thus do not see any reward for the effort expended in applying, are less favorably disposed towards the program.

CHAPTER VI

RECOMMENDATIONS AND REFLECTIONS

The value of the findings presented in this thesis would be enhanced by the completion of further research that encompasses a larger region (e.g., all Oklahoma counties, multiple states, etc.) and includes a larger number of WRP applicants. The inability to adequately distinguish the factors influencing application to the program from those influencing enrollment is a serious shortcoming of the current study. Future efforts should also include a fuller examination of economic and land operation variables such as primary land uses, land values, debt to asset ratio, and commodity prices. A fuller integration of these variables into the participation model would place the choices of landowners into context and thus illuminate the relative importance of different motivations for participation.

Revised measures of the importance of different information sources and of private property attitudes are clearly needed as well. Both performed less well than expected in this survey. It may also be useful to ground the quantitative results more fully through the use of qualitative methods. Specifically, the self-administered questionnaire used here could be supplemented with interviews of a subset of the sample. Interviewing respondents would help to clarify some of the sources of ambiguity in the results. For example, it would be useful to clarify the relationship between the various measures of wetland experience (ownership of wetlands, awareness of wetland projects, having visited wetlands), contact with the NRCS, and participation in the program. The current results do not adequately specify the relationship between these variables.

In spite of these limitations, the results do provide insights of potential use to agency officials as they strive to reverse recent declines in WRP enrollment. Reinstatement of the original fair market value appraisal rules will undoubtedly facilitate the efforts of these officials by restoring the effectiveness of financial incentives for participation. However, the return to higher annual rates of enrollment cannot be taken for granted. The declines in the program preceded changes to the appraisal process (see Figures 1.2 and 1.3), and the impact of new eligibility rules in the 2008 Farm Bill has yet to be fully felt. In this context, the program's long term health may depend to a large extent on being able to identify new populations of potential participants, including those motivated primarily by their conservation ethic.

The survey results underline the importance of the DC's role in recruiting these new participants for the WRP. Contact with the DCs was an important predictor of awareness of the program. The results also suggest tentatively that those who learn about the WRP through personal contact, including contact with DCs, are more likely to apply than those who learn about the program through the mass media. Further studies looking specifically at the extent and success of DC outreach efforts would help to confirm these findings. Such data would also clarify whether differences in outreach effort can explain some of the county by county variation in WRP enrollment. If this is indeed the case, it may be possible to boost participation in underperforming areas by rewarding DCs for their efforts and for the successful establishment of WRP projects in their districts.

The current study also identifies categories of landowners where the DCs might focus their recruitment efforts. One possibility is smaller landowners deriving less than 20% of their income from the land. The results imply that these landowners display attitudes more favorable to enrollment in the WRP and lower levels of awareness of the program than do larger landowners and those deriving more of their income from the land. Modes of contact that are utilized by the larger commercial landowners may not apply to landowners whose property is primarily a residence. Efforts to contact these landowners through non-traditional avenues may pay substantial dividends. Another possibility for gains in enrollment is suggested by the importance of direct wetland experience to pro-wetland attitudes. Although it is clear that news of the

program has diffused through the duck hunting community, it may be that other categories of wetland users (e.g., birdwatchers) represent a pool prospects worth exploring.

Other opportunities for increased participation would entail changes in the program itself or its administration. In some cases, landowners clearly value wetlands and wetland wildlife highly but remain concerned about submitting to specific restrictions on land use. The participation of these landowners might be attracted if greater flexibility with respect to timber harvesting, grazing, or other activities were allowed. Alternatively, it may be that the relatively strict restrictions on land use are one of the chief values of the WRP and that landowners who balk at such restriction should be directed towards other programs.

Declines in WRP participation raise serious questions about the long term health of this important conservation program. Only time will tell whether the downward trend can be reversed or whether the best days of the WRP lie in the past. It is hoped that the research presented here will help improve recruitment of landowners to the WRP and ensure continued growth. More broadly, it is hoped that this research will inform our understanding of participation in voluntary conservation easement programs.

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Appendix A

IRB Approval Letter, Pre-Notice Letter, First Survey Cover Letters, Follow-up Postcard, and Replacement Survey Cover Letters.

Oklahoma State University Institutional Review Board

Date: Friday, May 16, 2008
IRB Application No GU088
Proposal Title: Factors Affecting Landowner Participation in the Wetlands Reserve Program in Oklahoma
Reviewed and Exempt
Processed as:

Status Recommended by Reviewer(s): Approved Protocol Expires: 5/15/2009

Principal

Investigator(s):

Brian Paul Cross
4914 E. 24th St.
Tulsa, OK 74114

William J Focht
003 LSE
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☒ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

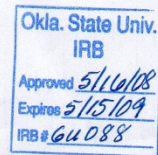
Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,



Shelia Kennison, Chair
Institutional Review Board

Pre-Notice Letter



May 12, 2008

[Insert landowner name.]
1313 Erewhon Lane
Erewhon, OK 13131

A few days from now you will receive a request by mail to fill out a brief questionnaire for a research study of land management and wetland conservation in Oklahoma

We are writing in advance because many people like to know ahead of time that they will be contacted. This research study is an important project with the potential to improve the success of resource conservation programs and to ensure that they meet the needs of private landowners.

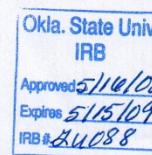
Thank you in advance for your time and consideration. It is only with the generous help of landowners such as yourself that this research can be successful.

Sincerely,

Dr. Will Focht
Director,

Brian Cross
Principal Investigator

First Cover Letter (enrollees)



[Insert landowner name.]
1313 Erewhon Lane
Erewhon, OK 13131

May 19, 2008

We are writing to ask for your help with an important research study of land management and wetland conservation in Oklahoma. The focus of this research study is landowner participation in the Wetlands Reserve Program (WRP).

As part of our research, we are contacting WRP enrollees in selected Oklahoma counties and asking them to complete a short questionnaire. The insights gained from your answers to this questionnaire will help with the design and implementation of programs that promote resource conservation while meeting the needs of landowners.

It is my understanding that you are at least 18 years old and that you have enrolled land in [insert county name] in the WRP. If this is the case and you would like to take part, please complete the enclosed questionnaire and return it in the envelope provided. We estimate that it will take 10-15 minutes to answer all questions. If the land enrolled in the WRP was owned by more than one individual at the time of enrollment, the questionnaire should be complete by the individual most responsible for the decision to enroll.

Participation in this research study is voluntary. If you do not wish to participate, please return a blank questionnaire in the envelope provided so that we may remove you from our mailing list. If you are not eligible for this research study because you are under the age of 18 or because you never enrolled land in the WRP, please write "INELIGIBLE" on the questionnaire before returning it.

If you do participate, your answers will be kept private. Any written results will discuss group findings and will not include information that will identify you personally. Research records will be stored securely and only researchers and individuals responsible for research oversight will have access to the records. Each questionnaire is marked with an identifying number so that we may maintain our mailing list, but all records with your name(s) will be deleted at the conclusion of the research study.

Thank you for your help with this important research project. If you have any questions or comments, please contact us at Landowner Surveys, Environmental Science Graduate Program, 700 N. Greenwood Ave., Tulsa, OK 74066 (phone: 918-851-9976; email: bpcross@okstate.edu). If you have questions about your rights as a participant, you may also contact Dr. Shelia Kennison, IRB Chair, 219 Cordell N., Stillwater, OK 74078 (phone: 405-744-1676; email: irb@okstate.edu).

Sincerely,

Dr. Will Focht
Director

Brian Cross
Principal Investigator

First Cover Letter (non-enrollees)



[Insert landowner name.]
1313 Erehon Lane
Erehon, OK 13131

May 19, 2008

We are writing to ask for your help with an important research study of land management and wetland conservation in Oklahoma. The focus of this research study is landowner participation in the Wetlands Reserve Program (WRP), a conservation easement program run by the Natural Resources Conservation Service (NRCS).

As part of our research, we are contacting individuals who own land in Oklahoma counties with wetland areas and asking them to complete a short questionnaire. The insights gained from your answers to this questionnaire will help with the design and implementation of programs that promote resource conservation while meeting the needs of landowners.

It is my understanding that you are at least 18 years old and that you own land in [insert county name], OK. If this is correct and you would like to take part in this research study, please complete the questionnaire that is appropriate to your situation and return it in the envelope provided.

- If you have ever applied to the WRP, complete the blue questionnaire.
- If you have never applied to the WRP, complete the white questionnaire.

We estimate that it will take 10-15 minutes to answer all questions. If most of your land is owned jointly with other individuals, the individual most responsible for making land management decisions should complete the questionnaire.

Participation is voluntary. If you do not wish to participate, please return a blank questionnaire so that we may remove you from our mailing list. If you are not eligible for this research study because you are under the age of 18 or you don't own land in [insert county name], please write "INELIGIBLE" on the questionnaire before returning it.

If you do participate, your answers will be kept private. Any written results will discuss group findings and will not include information that will identify you personally. Research records will be stored securely and only researchers and individuals responsible for research oversight will have access to the records. Each questionnaire is marked with an identifying number so that we may maintain our mailing list, but all records with your name(s) will be deleted at the conclusion of the research study.

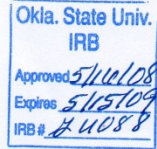
Thank you for your help with this important research project. If you have any questions or comments, please contact us at Landowner Surveys, Environmental Science Graduate Program, 700 N. Greenwood Ave., Tulsa, OK 74066 (phone: 918-851-9976; email: bpcross@okstate.edu). If you have questions about your rights as a participant, you may also contact Dr. Shelia Kennison, IRB Chair, 219 Cordell N., Stillwater, OK 74078 (phone: 405-744-1676; email: irb@okstate.edu).

Sincerely,

Dr. Will Focht
Director,

Brian Cross
Principal Investigator

Follow-up Postcard



May 26, 2008

Last week, a questionnaire dealing with land management and wetland conservation was mailed to you. Your name was drawn from a list of individuals owning land in counties with wetland areas or from a list of enrollees in the WRP.

If you have already completed and returned the questionnaire, please accept our sincere thanks. If not, please do so today. We are especially grateful for your help because it is only by asking people like you that we can fully understand decisions related to land management and wetland conservation.

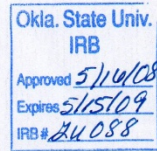
If you did not receive a questionnaire, or if it was misplaced, please contact us by mail at Landowner Surveys, Environmental Science Graduate Program, 700 N. Greenwood Ave., Tulsa, OK 74066, by email at bpcross@okstate.edu or by phone at 918-851-9976, and we will send you another questionnaire.

Sincerely,

Dr. Will Focht
Director

Brian Cross
Principal Investigator

Replacement Survey Cover Letter (enrollees)



[Insert landowner name.]
1313 Erehwon Lane
Erehwon, OK 13131

June 2, 2008

About two weeks ago, we sent you a questionnaire dealing with land management and the Wetlands Reserve Program (WRP) in Oklahoma. To the best of our knowledge, it has not been returned.

Your participation in this research study is completely voluntary, but we are writing to you again because of the importance that your response has for the validity of our results. It is only by hearing from almost everyone in the research study that we can ensure that our findings are truly representative.

If you do not wish to participate, please return one of the blank surveys in the envelope provided so that we may remove you from our mailing list. If you believe that you are not eligible for this research study because you are under 18 or you never enrolled land in the WRP in [insert county name], please write "INELIGIBLE" on the questionnaires before returning it.

On the other hand, if you are eligible and willing to participate, please complete the enclosed questionnaire and return it in the envelope provided. We estimate that the questionnaire will take 10-15 minutes to complete. If the land enrolled in the WRP was owned by more than one individual at the time of enrollment, the questionnaire should be complete by the individual most responsible for the decision to enroll.

As noted in previous mailings, your answers to this questionnaire will be kept private. Any written results will discuss group findings and will not include information that will identify you personally. Research records will be stored securely and only researchers and individuals responsible for research oversight will have access to the records. Each questionnaire is marked with an identifying number so that we may maintain our mailing list, but all records with your name will be deleted at the conclusion of the research study.

To thank you for your time and consideration, we are including \$1 as a small token of our appreciation. If you have any questions or comments, please contact us at Landowner Surveys, Environmental Science Graduate Program, 700 N. Greenwood Ave., Tulsa, OK 74066 (phone: 918-851-9976; email: bpcross@okstate.edu). If you have questions about your rights as a participant, you may also contact Dr. Shelia Kennison, IRB Chair, 219 Cordell N., Stillwater, OK 74078 (phone: 405-744-1676; email: irb@okstate.edu).

Sincerely,

Dr. Will Focht
Director

Brian Cross
Principal Investigator

Replacement Survey Cover Letter (non-enrollees)



[Insert landowner name.]

1313 Erewhon Lane
Erewhon, OK 13131

June 2, 2008

About two weeks ago, we sent you a questionnaire dealing with land management and the Wetlands Reserve Program (WRP) in Oklahoma. To the best of our knowledge, it has not been returned.

Your participation in this research study is completely voluntary, but we are writing to you again because of the importance that your response has for the validity of our results. It is only by hearing from almost everyone in the research study that we can ensure that our findings are truly representative.

If you do not wish to participate, please return one of the blank surveys in the envelope provided so that we may remove you from our mailing list. If you believe that you are not eligible for this research study because you are under 18 or you do not own land in [insert county name], please write "INELIGIBLE" on the questionnaires before returning it.

On the other hand, if you are eligible and willing to participate, please complete the questionnaire that is appropriate to your situation and return it in the envelope provided.

- If you have ever applied to the WRP, complete the blue questionnaire.
- If you have never applied to the WRP, complete the white questionnaire.

We estimate that it will require 10-15 minutes to answer all questions. When you have finished, please return the completed questionnaire in the return envelope provided. If most of your land is owned jointly with other individuals, the individual most responsible for making land management decisions should complete the questionnaire.

As noted previously, your answers to this questionnaire will be kept private. Any written results will discuss group findings and will not include information that will identify you personally. Research records will be stored securely and only researchers and individuals responsible for research oversight will have access to the records. Each questionnaire is marked with an identifying number so that we may maintain our mailing list, but all records with your name will be deleted at the conclusion of the research study.

To thank you for your time and consideration, we are including \$1 as a small token of our appreciation. If you have any questions or comments, please contact us at Landowner Surveys, Environmental Science Graduate Program, 700 N. Greenwood Ave., Tulsa, OK 74066 (phone: 918-851-9976; email: bpcross@okstate.edu). If you have questions about your rights as a participant, you may also contact Dr. Shelia Kennison, IRB Chair, 219 Cordell N., Stillwater, OK 74078 (phone: 405-744-1676; email: irb@okstate.edu).

Sincerely,

Dr. Will Focht
Director

Brian Cross
Principal Investigator

Appendix B:

Enrollee, Applicant, and Non-applicant Questionnaires

Landowner Questionnaire (WRP Enrollee)

- =====
- 1. How many acres of land do you own, hold in trust, or lease from others?**
(Include any land controlled with other individuals.)
- own: _____ acres
 hold in trust: _____ acres
 lease from others: _____ acres
- 2. Are you aware of any wetland areas on this land?** *(Wetlands are frequently flooded areas, such as marshes, swamps, and wet meadows.)*
- ☐ No
☐ Yes \Rightarrow If yes, approximately how many acres? _____ acres
- 3. Are you aware of any former wetland areas on this land, for example, areas that have been drained?**
- ☐ No
☐ Yes \Rightarrow If yes, approximately how many acres? _____ acres
- 4. Are you aware of any major wetland projects (e.g., Red Slough, Hackberry Flats) in your region?**
- ☐ No
☐ Yes
- 5. Have you ever participated in, or worked with, any of the following?** *(Check all that apply.)*
- ☐ Conservation land trusts (e.g., Nature Conservancy, Land Legacy)
☐ Conservation Reserve Program
☐ Environmental Quality Incentive Program
☐ Farm and Ranch Lands Protection Program
☐ Grasslands Reserve Program
☐ Partners for Fish and Wildlife Program
☐ Wildlife Habitat Incentive Program

- 6. What impact, if any, has the "swampbuster" provision of the 1985 Food Security Act ("Farm Bill") had on management of your land?** *(Check one.)*
- ☐ Very negative impact
☐ Slightly negative impact
☐ Slightly positive impact
☐ Very positive impact
☐ No impact/Don't know
- 7. What impact, if any, has section 404 of the Clean Water Act had on management of your land?** *(Check one.)*
- ☐ Very negative impact
☐ Slightly negative impact
☐ Slightly positive impact
☐ Very positive impact
☐ No impact/Don't know
- 8. How would you describe your opinion of conservation easement programs (e.g., Wetlands Reserve Program, Grasslands Reserve Program)?** *(Check one.)*
- ☐ Very negative
☐ Negative
☐ Positive
☐ Very positive
☐ No opinion/Don't know
- 9. How would you describe the opinions of your family, friends, and neighbors about such programs?** *(Check one.)*
- ☐ Very negative
☐ Negative
☐ Mixed opinions
☐ Positive
☐ Very positive
☐ No opinion/Don't know

Continue 

10. The following statements deal with your opinions about wetlands, natural resources, and related subjects. For each statement, please indicate whether you strongly disagree, disagree, neither agree nor disagree, agree, or strongly agree. (Check one box in each row.)


	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Wetlands are an important resource that should be protected.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landowners have the right to do as they please on their own land.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The government has a responsibility to help landowners manage natural resources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Economic progress requires that wetlands be drained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Government involvement in the management of natural resources generally does more harm than good.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In general, landowners are allowed to get away with too much on their land.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wetlands have little, if any, value to society.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private property rights should be restricted when it is necessary to promote the greater good.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management of natural resources should generally be left to the free market.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Destroying wetlands upsets the balance of nature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private property rights are among the most important rights we have.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Without government involvement, many natural resources would be overused.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


11. When making decisions about the management of your land, how important are the following sources of information? For each source, please indicate whether it has no importance, low importance, moderate importance, high importance, or you don't know. (Check one box in each row.)

	No importance	Low importance	Moderate importance	High importance	Don't know
Family, friends, and neighbors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Newspapers with <u>local</u> distribution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Newspapers with <u>statewide</u> distribution (e.g., Daily Oklahoman, Tulsa World)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Newspapers with <u>nationwide</u> distribution (e.g., Wall Street Journal)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local SWCD (Soil and Water Conservation District)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local trade organizations (e.g., local Farm Bureau office)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local OSU extension office	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local office of the NRCS (Natural Resources Conservation Service)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
State agencies (e.g., Dept. of Agriculture, Food, and Forestry; Dept. of Wildlife Conservation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National trade or professional organizations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National environmental organizations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Please specify: _____)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



12. Have you ever met with any of the current or former NRCS (Natural Resources Conservation Service) employees at the county level?

☐ No  (Skip to question #19)

 ☐ Yes

13. If yes, in what state and county have you had the most contact?

State: _____

County: _____

14. How frequently, on average, have you had contact with these county-level NRCS employees since your first meeting? (Check one.)

- ☐ Once per year or less
☐ Once every few months
☐ Once per month
☐ Once per week
☐ More than once per week


15. Which of the following statements best describes your opinion of these county-level NRCS employees? (Check one.)


- ☐ They are not like me and my neighbors at all.
☐ They are like me and my neighbors only a little.
☐ They are like me and my neighbors to a moderate degree.
☐ They are just like me and my neighbors.
☐ Don't know/Can't say

16. How would you rate your overall level of trust in these county-level NRCS employees? (Check one.)

- ☐ I never trust what they say.
☐ I sometimes trust what they say.
☐ I usually trust what they say.
☐ I always trust what they say.
☐ Don't know/can't say

17. Were you in contact with these county-level NRCS employee(s) about the WRP before you applied to the program?

☐ No  (Skip to question #19)

 ☐ Yes

18. If yes, was this contact initiated by you or by the NRCS employee(s)? (Check one.)

- ☐ By me
☐ By the NRCS employee(s)
☐ Don't know/can't say

19. In what year, did you apply to the WRP?

20. Approximately how long had you owned the proposed WRP site at the time of your application?

_____ years

21. What type of easement or cost sharing agreement did you apply for? (Check one.)

- ☐ Permanent easement
☐ 30-year easement
☐ Restoration cost-share agreement
☐ Don't know/can't say

22. How did you first learn about the WRP? (Check one.)

- ☐ From friends, family, or neighbors.
☐ From a radio, television, or newspaper story.
☐ From a radio, television, or newspaper advertisement.
☐ From a county-level NRCS employee.
☐ From a state-level NRCS employee.
☐ From a NRCS brochure/pamphlet.
☐ From the NRCS website.
☐ Other (Please specify: _____)

23. When deciding to apply to the WRP, how important were each of the following factors? For each factor, please indicate whether it had no importance, low importance, moderate importance, high importance, or you don't know. (Check one box in each row.)

	No importance	Low importance	Moderate importance	High importance	Don't know
Environmental benefits to the community (flood control, water quality, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildlife conservation benefits to the community	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natural beauty/aesthetic benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal use of the wetlands for hunting or other recreational activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Profit from rental of the wetlands for hunting or other recreational activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assistance with restoration of the wetlands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Property or estate tax considerations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easement payment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Encouragement of family, friends, or neighbors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Encouragement of the NRCS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Please specify:)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

24. Please use the space below to expand on any of your reasons for applying to the WRP.



25. How many total acres are included in the project?

_____ acres

26. What was the total easement price paid by the NRCS?

\$ _____

27. How would you rate the assistance provided to you by the NRCS during the application process? (Check one.)

- ☐ Poor
- ☐ Fair
- ☐ Good
- ☐ Excellent
- ☐ Don't know/can't say

28. How would you rate the level of communication between you and the NRCS during the application process? (Check one.)

- ☐ Poor
- ☐ Fair
- ☐ Good
- ☐ Excellent
- ☐ Don't know/can't say

29. How would you rate your overall experience with the WRP program? (Check one.)

- ☐ Poor
- ☐ Fair
- ☐ Good
- ☐ Excellent
- ☐ Don't know/can't say

30. What is the current status of the WRP project on your land? (Check one.)

- ☐ The contract has been signed, but no planning or restoration work has been completed.
- ☐ A restoration plan is currently being developed.
- ☐ A restoration plan has been completed, but restoration work has not yet begun.
- ☐ Restoration work has begun, but is not yet complete.
- ☐ The project has been completed.
- ☐ Don't know/can't say

Demographic Information

31. How old are you? _____ years old

32. What is your gender?

- ☐ Male
☐ Female

33. In what state and county is your primary residence?

State: _____

County: _____

34. How long have you lived in this county?
_____ (years)

35. In what state and county do you own most of your land?

State _____

County _____

36. Are you a member of any conservation or environmental organizations (e.g., Ducks Unlimited, Sierra Club)?

- ☐ No
☐ Yes

37. In a typical year, which of the following outdoor recreational activities do you engage in? (Check all that apply.)

- ☐ Fishing
☐ Duck hunting
☐ Other game hunting
☐ Hiking and camping
☐ Birdwatching
☐ Other (Specify: _____)

38. Have you ever visited a wetland for recreational purposes?

- ☐ No
☐ Yes

39. What is the highest level of education you have reached? (Check one.)

- ☐ Some high school or less
☐ High school diploma/GED
☐ Some college
☐ Bachelor's degree
☐ Graduate degree

40. Last year, what was your approximate total household income? (Check one.)

- ☐ \$10,000 or less
☐ \$10,001 to \$20,000
☐ \$20,001 to \$35,000
☐ \$35,001 to \$50,000
☐ \$50,001 to \$100,000
☐ \$100,001 or more

41. Approximately what percentage of this income came from the land that you own, lease, or hold in trust, including all uses (e.g., raising crops and livestock, mineral extraction, hunting, etc.)? (Check one.)

- ☐ 0% – 20%
☐ 21% – 40%
☐ 41% – 60%
☐ 61% – 80%
☐ 81% – 100%

42. Do you expect to pass your land on to members of your family (e.g., siblings, children, or grandchildren)?

- ☐ No
☐ Yes
☐ Don't know/can't say

43. Including yourself, how many people live in your household? _____

Continue




44. Please use the space below to tell us anything else about your experience with wetlands, the NRCS, or the WRP that you would like us to know.

Thank you for your time and consideration.
Please return your completed questionnaire
using the return envelope provided. If you no
longer have this envelope, please mail the
questionnaire to:

Landowner Survey
Env. Science Graduate Program
700 N. Greenwood Ave.
Tulsa, OK 74106

Landowner Questionnaire (Applicant)

Use this sheet if you have ever applied to the Wetlands Reserve Program (WRP).

<p> 1. How many acres of land do you <u>own, hold in trust, or lease from others?</u> (Include any land controlled with other individuals.)</p> <p style="margin-left: 40px;">own: _____ acres</p> <p style="margin-left: 40px;">hold in trust: _____ acres</p> <p style="margin-left: 40px;">lease from others: _____ acres</p> <p>2. Are you aware of any wetland areas on this land? (<i>Wetlands are frequently flooded areas, such as marshes, swamps, and wet meadows.</i>)</p> <p style="margin-left: 40px;"><input type="checkbox"/> No</p> <p style="margin-left: 40px;"><input type="checkbox"/> Yes  If yes, approximately how many acres? _____ acres</p> <p>3. Are you aware of any former wetland areas on this land, for example, areas that have been drained?</p> <p style="margin-left: 40px;"><input type="checkbox"/> No</p> <p style="margin-left: 40px;"><input type="checkbox"/> Yes  If yes, approximately how many acres? _____ acres</p> <p>4. Are you aware of any major wetland projects (e.g., Red Slough, Hackberry Flats) in your region?</p> <p style="margin-left: 40px;"><input type="checkbox"/> No</p> <p style="margin-left: 40px;"><input type="checkbox"/> Yes</p> <p>5. Have you ever participated in, or worked with, any of the following? (<i>Check all that apply.</i>)</p> <div style="margin-left: 40px;"> <input type="checkbox"/> Conservation land trusts (e.g., Nature Conservancy, Land Legacy) <input type="checkbox"/> Conservation Reserve Program <input type="checkbox"/> Environmental Quality Incentive Program <input type="checkbox"/> Farm and Ranch Lands Protection Program <input type="checkbox"/> Grasslands Reserve Program <input type="checkbox"/> Partners for Fish and Wildlife Program <input type="checkbox"/> Wildlife Habitat Incentive Program </div>	<p>6. What impact, if any, has the “swampbuster” provision of the 1985 Food Security Act (“Farm Bill”) had on management of your land? (<i>Check one.</i>)</p> <div style="margin-left: 40px;"> <input type="checkbox"/> Very negative impact <input type="checkbox"/> Slightly negative impact <input type="checkbox"/> Slightly positive impact <input type="checkbox"/> Very positive impact <input type="checkbox"/> No impact/Don't know </div> <p>7. What impact, if any, has section 404 of the Clean Water Act had on management of your land? (<i>Check one.</i>)</p> <div style="margin-left: 40px;"> <input type="checkbox"/> Very negative impact <input type="checkbox"/> Slightly negative impact <input type="checkbox"/> Slightly positive impact <input type="checkbox"/> Very positive impact <input type="checkbox"/> No impact/Don't know </div> <p>8. How would you describe <u>your opinion</u> of conservation easement programs (e.g., Wetlands Reserve Program, Grasslands Reserve Program)? (<i>Check one.</i>)</p> <div style="margin-left: 40px;"> <input type="checkbox"/> Very negative <input type="checkbox"/> Negative <input type="checkbox"/> Positive <input type="checkbox"/> Very positive <input type="checkbox"/> No opinion/Don't know </div> <p>9. How would you describe <u>the opinions of your family, friends, and neighbors</u> about such programs? (<i>Check one.</i>)</p> <div style="margin-left: 40px;"> <input type="checkbox"/> Very negative <input type="checkbox"/> Negative <input type="checkbox"/> Mixed opinions <input type="checkbox"/> Positive <input type="checkbox"/> Very positive <input type="checkbox"/> No opinion/Don't know </div>
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 Continue

10. The following statements deal with your opinions about wetlands, natural resources, and related subjects. For each statement, please indicate whether you strongly disagree, disagree, neither agree nor disagree, agree, or strongly agree. (Check one box in each row.)


	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Wetlands are an important resource that should be protected.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landowners have the right to do as they please on their own land.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The government has a responsibility to help landowners manage natural resources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Economic progress requires that wetlands be drained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Government involvement in the management of natural resources generally does more harm than good.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In general, landowners are allowed to get away with too much on their land.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wetlands have little, if any, value to society.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private property rights should be restricted when it is necessary to promote the greater good.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management of natural resources should generally be left to the free market.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Destroying wetlands upsets the balance of nature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private property rights are among the most important rights we have.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Without government involvement, many natural resources would be overused.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


11. When making decisions about the management of your land, how important are the following sources of information? For each source, please indicate whether it has no importance, low importance, moderate importance, high importance, or you don't know. (Check one box in each row.)

	No importance	Low importance	Moderate importance	High importance	Don't know
Family, friends, and neighbors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Newspapers with <u>local</u> distribution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Newspapers with <u>statewide</u> distribution (e.g., Daily Oklahoman, Tulsa World)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Newspapers with <u>nationwide</u> distribution (e.g., Wall Street Journal)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local SWCD (Soil and Water Conservation District)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local trade organizations (e.g., local Farm Bureau office)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local OSU extension office	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local office of the NRCS (Natural Resources Conservation Service)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
State agencies (e.g., Dept. of Agriculture, Food, and Forestry; Dept. of Wildlife Conservation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National trade or professional organizations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National environmental organizations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Please specify: _____)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



12. Have you ever met with any of the current or former NRCS (Natural Resources Conservation Service) employees at the county level?

☐ No  (Skip to question #19)

 ☐ Yes

13. If yes, in what state and county have you had the most contact?

State: _____

County: _____

14. How frequently, on average, have you had contact with these county-level NRCS employees since your first meeting? (Check one.)

- ☐ Once per year or less
- ☐ Once every few months
- ☐ Once per month
- ☐ Two or three times per month
- ☐ Once per week or more


15. Which of the following statements best describes your opinion of these county-level NRCS employees? (Check one.)


- ☐ They are not like me and my neighbors at all.
- ☐ They are like me and my neighbors only a little.
- ☐ They are like me and my neighbors to a moderate degree.
- ☐ They are just like me and my neighbors.
- ☐ Don't know/Can't say

16. How would you rate your overall level of trust in these county-level NRCS employees? (Check one.)

- ☐ I never trust what they say.
- ☐ I sometimes trust what they say.
- ☐ I usually trust what they say.
- ☐ I always trust what they say.
- ☐ Don't know/Can't say

17. Were you in contact with these county-level NRCS employee(s) about the WRP before you applied to the program?

☐ No  (Skip to question #19)

 ☐ Yes

18. If yes, was this contact initiated by you or by the NRCS employee(s)? (Check one.)

- ☐ By me
- ☐ By the NRCS employee(s)
- ☐ Don't know/can't say

=====

19. In what year did you apply to the WRP?

20. Approximately how long had you owned the proposed WRP site at the time of your application?

_____ years

21. What type of easement or cost sharing agreement did you apply for? (Check one.)

- ☐ Permanent easement
- ☐ 30-year easement
- ☐ Restoration cost-share agreement
- ☐ Don't know/can't say

22. How did you first learn about the WRP? (Check one.)

- ☐ From friends, family, or neighbors.
- ☐ From a radio, television, or newspaper story.
- ☐ From a radio, television, or newspaper advertisement.
- ☐ From a county-level NRCS employee.
- ☐ From a state-level NRCS employee.
- ☐ From a NRCS brochure/pamphlet.
- ☐ From the NRCS website.
- ☐ Other (Please specify: _____)

23. When deciding to apply to the WRP, how important were each of the following factors? For each factor, please indicate whether it had no importance, low importance, moderate importance, high importance, or you don't know. (Check one box in each row.)

	No importance	Low importance	Moderate importance	High importance	Don't know
Environmental benefits to the community (flood control, water quality, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildlife conservation benefits to the community	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natural beauty/aesthetic benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal use of the wetlands for hunting or other recreational activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Profit from rental of the wetlands for hunting or other recreational activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assistance with restoration of the wetlands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Property or estate tax considerations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easement payment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Encouragement of family, friends, or neighbors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Encouragement of the NRCS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Please specify:)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

24. Please use the space below to expand on any of your reasons for applying to the WRP.



25. How many total acres were included in the proposed WRP site?

_____ acres

26. How would you rate the assistance provided to you by the NRCS (county and state) during the application process? *(Check one.)*

- ☐ Poor
☐ Fair
☐ Good
☐ Excellent
☐ Don't know/can't say

27. How would you rate the level of communication between you and the NRCS (county and state) during the application process? *(Check one.)*

- ☐ Poor
☐ Fair
☐ Good
☐ Excellent
☐ Don't know/can't say

28. How would you rate your overall experience with the WRP program? *(Check one.)*

- ☐ Poor
☐ Fair
☐ Good
☐ Excellent
☐ Don't know/can't say

29. What was the outcome of your application? *(Check one.)*

- ☐ My application is now under review.
☐ I eventually withdrew my application.
☐ My application was ruled ineligible.
☐ My application was ruled eligible, but no funding was available.
☐ The NRCS made an easement offer, but I rejected it. (If so, how much was the total easement offer? \$_____)
☐ I signed a contract with the NRCS. (If so, how much was the total easement price? \$_____)

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***If you withdrew your application or rejected an easement offer, please continue to question #30.**

***Otherwise, please skip to question #31 (Demographic Information).**

30. Please use the space below to describe your reasons for withdrawing your application or rejecting the easement offer.

Demographic Information

31. How old are you? _____ years old

32. What is your gender?

- ☐ Male
☐ Female

33. In what state and county is your primary residence?

State: _____

County: _____

34. How long have you lived in this county?

_____ (years)

35. In what state and county do you own most of your land?

State _____

County _____

36. Are you a member of any conservation or environmental organizations (e.g., Ducks Unlimited, Sierra Club)?

- ☐ No
☐ Yes

37. In a typical year, which of the following outdoor recreational activities do you engage in? (Check all that apply.)

- ☐ Fishing
☐ Duck hunting
☐ Other game hunting
☐ Hiking and camping
☐ Birdwatching
☐ Other (Specify: _____)

38. Have you ever visited a wetland for recreational purposes?

- ☐ No
☐ Yes

39. What is the highest level of education you have reached? (Check one.)

- ☐ Some high school or less
☐ High school diploma/GED
☐ Some college
☐ Bachelor's degree
☐ Graduate degree

40. Last year, what was your approximate total household income? (Check one.)

- ☐ \$10,000 or less
☐ \$10,001 to \$20,000
☐ \$20,001 to \$35,000
☐ \$35,001 to \$50,000
☐ \$50,001 to \$100,000
☐ \$100,001 or more

41. Approximately what percentage of this income came from the land that you own, lease, or hold in trust, including all uses (e.g., raising crops and livestock, mineral extraction, hunting, etc.)? (Check one.)

- ☐ 0% – 20%
☐ 21% – 40%
☐ 41% – 60%
☐ 61% – 80%
☐ 81% – 100%

42. Do you expect to pass your land on to members of your family (e.g., siblings, children, or grandchildren)?

- ☐ No
☐ Yes
☐ Don't know/can't say

43. Including yourself, how many people live in your household? _____




44. Please use the space below to tell us anything else about your experience with wetlands, the NRCS, or the WRP that you would like us to know.

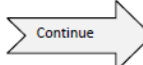
Thank you for your time and consideration.
Please return your completed questionnaire
using the return envelope provided. If you no
longer have this envelope, please mail the
questionnaire to:

Landowner Survey
Env. Science Graduate Program
700 N. Greenwood Ave.
Tulsa, OK 74106

Landowner Questionnaire (Non-Applicant)

Use this sheet if you have never applied to the Wetlands Reserve Program (WRP).

<p>1. How many acres of land do you <u>own, hold in trust, or lease from others?</u> (Include any land controlled with other individuals.)</p> <p> own: _____ acres</p> <p>hold in trust: _____ acres</p> <p>lease from others: _____ acres</p> <p>2. Are you aware of any wetland areas on this land? (Wetlands are frequently flooded areas, such as marshes, swamps, and wet meadows.)</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes \Rightarrow If yes, approximately how many acres? _____ acres</p> <p>3. Are you aware of any former wetland areas on this land, for example, areas that have been drained?</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes \Rightarrow If yes, approximately how many acres? _____ acres</p> <p>4. Are you aware of any major wetland projects (e.g., Red Slough, Hackberry Flats) in your region?</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes</p> <p>5. Have you ever participated in, or worked with, any of the following? (Check all that apply.)</p> <p><input type="checkbox"/> Conservation land trusts (e.g., Nature Conservancy, Land Legacy)</p> <p><input type="checkbox"/> Conservation Reserve Program</p> <p><input type="checkbox"/> Environmental Quality Incentive Program</p> <p><input type="checkbox"/> Farm and Ranch Lands Protection Program</p> <p><input type="checkbox"/> Grasslands Reserve Program</p> <p><input type="checkbox"/> Partners for Fish and Wildlife Program</p> <p><input type="checkbox"/> Wildlife Habitat Incentive Program</p>	<p>6. What impact, if any, has the "swampbuster" provision of the 1985 Food Security Act ("Farm Bill") had on management of your land? (Check one.)</p> <p><input type="checkbox"/> Very negative impact</p> <p><input type="checkbox"/> Slightly negative impact</p> <p><input type="checkbox"/> Slightly positive impact</p> <p><input type="checkbox"/> Very positive impact</p> <p><input type="checkbox"/> No impact/Don't know</p> <p>7. What impact, if any, has section 404 of the Clean Water Act had on management of your land? (Check one.)</p> <p><input type="checkbox"/> Very negative impact</p> <p><input type="checkbox"/> Slightly negative impact</p> <p><input type="checkbox"/> Slightly positive impact</p> <p><input type="checkbox"/> Very positive impact</p> <p><input type="checkbox"/> No impact/Don't know</p> <p>8. How would you describe <u>your opinion</u> of conservation easement programs (e.g., Wetlands Reserve Program, Grasslands Reserve Program)? (Check one.)</p> <p><input type="checkbox"/> Very negative</p> <p><input type="checkbox"/> Negative</p> <p><input type="checkbox"/> Positive</p> <p><input type="checkbox"/> Very positive</p> <p><input type="checkbox"/> No opinion/Don't know</p> <p>9. How would you describe <u>the opinions of your family, friends, and neighbors</u> about such programs? (Check one.)</p> <p><input type="checkbox"/> Very negative</p> <p><input type="checkbox"/> Negative</p> <p><input type="checkbox"/> Mixed opinions</p> <p><input type="checkbox"/> Positive</p> <p><input type="checkbox"/> Very positive</p> <p><input type="checkbox"/> No opinion/Don't know</p>
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10. The following statements deal with your opinions about wetlands, natural resources, and related subjects. For each statement, please indicate whether you strongly disagree, disagree, neither agree nor disagree, agree, or strongly agree. (Check one box in each row.)


	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Wetlands are an important resource that should be protected.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landowners have the right to do as they please on their own land.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The government has a responsibility to help landowners manage natural resources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Economic progress requires that wetlands be drained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Government involvement in the management of natural resources generally does more harm than good.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In general, landowners are allowed to get away with too much on their land.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wetlands have little, if any, value to society.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private property rights should be restricted when it is necessary to promote the greater good.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management of natural resources should generally be left to the free market.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Destroying wetlands upsets the balance of nature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private property rights are among the most important rights we have.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Without government involvement, many natural resources would be overused.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. When making decisions about the management of your land, how important are the following sources of information? For each source, please indicate whether it has no importance, low importance, moderate importance, high importance, or you don't know. (Check one box in each row.)

	No importance	Low importance	Moderate importance	High importance	Don't know
Family, friends, and neighbors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Newspapers with <u>local</u> distribution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Newspapers with <u>statewide</u> distribution (e.g., Daily Oklahoman, Tulsa World)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Newspapers with <u>nationwide</u> distribution (e.g. Wall Street Journal)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local SWCD (Soil and Water Conservation District)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local trade organizations (e.g., local Farm Bureau office)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local OSU extension office	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local office of the NRCS (Natural Resources Conservation Service)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
State agencies (e.g., Dept. of Agriculture, Food, and Forestry; Dept. of Wildlife Conservation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National trade or professional organizations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National environmental organizations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Please specify: _____)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



12. Have you ever met with any of the current or former NRCS (Natural Resources Conservation Service) employees at the county level?

☐ No  (Skip to question #17)

 ☐ Yes

13. If yes, in what state and county have you had the most contact?

State: _____

County: _____

14. How frequently, on average, have you had contact with these county-level NRCS employees since your first meeting? (Check one.)

- ☐ Once per year or less
- ☐ Once every few months
- ☐ Once per month
- ☐ Two or three times per month
- ☐ Once per week or more



15. Which of the following statements best describes your opinion of these county-level NRCS employees? (Check one.)

- ☐ They are not like me and my neighbors at all.
- ☐ They are like me and my neighbors only a little.
- ☐ They are like me and my neighbors to a moderate degree.
- ☐ They are just like me and my neighbors.
- ☐ Don't know/can't say

16. How would you rate your overall level of trust in these county-level NRCS employees? (Check one.)

- ☐ I never trust what they say.
- ☐ I sometimes trust what they say.
- ☐ I usually trust what they say.
- ☐ I always trust what they say.
- ☐ Don't know/can't say

17. Before taking this survey, had you ever heard of the WRP?

- ☐ No  (Skip to question #24)
-  ☐ Yes

18. How much do you know about the WRP?
(Check one.)

- ☐ Nothing
- ☐ A little
- ☐ Some
- ☐ A lot

19. Have you ever been in contact with county-level NRCS employee(s) about the WRP?

- ☐ No
- ☐ Yes

If yes, was this contact initiated by you or by the NRCS employee(s)? (Check one.)


- ☐ By me
- ☐ By the NRCS employee(s)
- ☐ Don't know/can't say

20. How did you first learn about the WRP?
(Check one.)

- ☐ From friends, family, or neighbors.
- ☐ From a radio, television, or newspaper story.
- ☐ From a radio, television, or newspaper advertisement.
- ☐ From a county-level NRCS employee.
- ☐ From a state-level NRCS employee.
- ☐ From a NRCS brochure/pamphlet.
- ☐ From the NRCS website.
- ☐ Other (Please specify: _____)

21. Which of the following statements best reflects your intentions with respect to the WRP? (Check one.)

- ☐ I have never considered whether to apply.
- ☐ I have decided to apply.
- ☐ I have decided not to apply.
- ☐ I have considered whether to apply, but have not decided yet.

 *If you have decided not to apply or have not decided yet, please continue to question #22.

*Otherwise, skip to question #24 (Demographic Info.)



22. How important were each of the following factors in your decision not to apply to the WRP (or to delay deciding)? For each factor, please indicate whether it had no importance, low importance, moderate importance, high importance, or you don't know. (Check one box in each row.)

	No importance	Low importance	Moderate importance	High importance	Don't know
Lack of information about the program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of suitable areas on my land	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Too many restrictions on land use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expected easement payment too small	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expected assistance with restoration too small	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reluctance to sell land/rights to the government	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Property and/or estate tax considerations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Considerations related to inheritance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discouragement by family, friends, or neighbors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discouragement by the NRCS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Please specify: _____)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

23. Please use the space below to expand on any of your reasons for not applying to the WRP.

Demographic Information

24. How old are you? _____ years old

25. What is your gender?

- ☐ Male
☐ Female

26. In what state and county is your primary residence?

State: _____

County: _____

27. How long have you lived in this county?
_____ (years)

28. In what state and county do you own most of your land?

State: _____

County: _____

29. Are you a member of any conservation or environmental organizations (e.g., Ducks Unlimited, Sierra Club)?

- ☐ No
☐ Yes

30. In a typical year, which of the following outdoor recreational activities do you engage in? (Check all that apply.)

- ☐ Fishing
☐ Duck hunting
☐ Other game hunting
☐ Hiking and camping
☐ Birdwatching
☐ Other (Specify: _____)

31. Have you ever visited a wetland for recreational purposes?

- ☐ No
☐ Yes

32. What is the highest level of education you have reached? (Check one.)

- ☐ Some high school or less
☐ High school diploma/GED
☐ Some college
☐ Bachelor's degree
☐ Graduate degree

33. Last year, what was your approximate total household income? (Check one.)

- ☐ \$10,000 or less
☐ \$10,001 to \$20,000
☐ \$20,001 to \$35,000
☐ \$35,001 to \$50,000
☐ \$50,001 to \$100,000
☐ \$100,001 or more

34. Approximately what percentage of this income came from the land that you own, lease, or hold in trust, including all uses (e.g., raising crops and livestock, mineral extraction, hunting, etc.)? (Check one.)

- ☐ 0% – 20%
☐ 21% – 40%
☐ 41% – 60%
☐ 61% – 80%
☐ 81% – 100%

35. Do you expect to pass your land on to members of your family (e.g., siblings, children, or grandchildren)?

- ☐ No
☐ Yes
☐ Don't know/can't say

36. Including yourself, how many people live in your household? _____



37. Please use the space below to tell us anything else about your experience with wetlands, the NRCS, or the WRP that you would like us to know.

Thank you for your time and consideration.
Please return your completed questionnaire
using the return envelope provided. If you no
longer have this envelope, please mail the
questionnaire to:

Landowner Survey
Env. Science Graduate Program
700 N. Greenwood Ave.
Tulsa, OK 74106

Appendix C

Responses to Enrollee, Applicant, and Non-applicant Questionnaires.

Table C1. Total acres owned, leased, and held in trust (Question #1)

	0 to 100	101 to 500	501 to 1,000	1,001 to 5,000	5,001 to 10,000	More than 10,000	No response/ ineligible response	Total
Non-Applicants	53	62	24	21	2	1	4	167
Applicants and enrollees	5	23	10	11	0	0	0	49
Total	58	85	34	32	2	1	4	216

Table C2. Ownership of current or former wetland areas (Questions #2 and #3)

	Owns Wetlands	Does Not Own Wetlands	No response/ ineligible response	Total
Non-applicants	58	102	7	167
Applicants and enrollees	47	1	1	49
Total	105	103	8	216

Table C3. Awareness of major wetland projects (Question #4)

	Not Aware	Aware	No response/ ineligible response	Total
Non-applicants	147	17	3	167
Applicants and enrollees	19	30	0	49
Total	166	47	3	216

Table C4. Number of landowners participating in seven different conservation programs (Question #5)

	Land Trusts	CRP	EQIP	FRLPP	GRP	Partners for Fish and Wildlife	WHIP	No Response or Ineligible Response
Non-applicants	1	7	8	1	3	2	3	5
Applicants and enrollees	0	13	6	0	3	15	8	0
Total	1	20	14	1	6	17	11	5

Table C5. Impact of Swampbuster (Question #6)

	Very Negative	Negative	Postive	Very Positive	No impact/ Don't Know	No Response or Ineligible Response	Total
Non-applicants	2	3	4	1	151	6	167
Applicants and enrollees	2	0	1	3	42	1	49
Total	5	3	5	4	193	7	216

Table C6. Impact of Section 404 of the Clean Water Act (Question #7)

	Very Negative	Negative	Positive	Very Positive	No impact/ Don't Know	No Response or Ineligible Response	Total
Non-applicants	4	4	3	1	150	5	167
Applicants and enrollees	1	0	1	1	45	1	49
Total	5	4	4	2	195	6	216

Table C7. Opinion of conservation easement programs (Question #8)

	Very Negative	Negative	Positive	Very Positive	No Opinion /Don't Know	No Response or Ineligible Response	Total
Non-applicants	13	12	20	7	111	4	167
Applicants and enrollees	1	3	21	22	2	0	49
Total	14	15	41	29	113	4	216

Table C8. Opinion of family, friends, and neighbors about conservation easement programs (Questions #9)

	Very Negative	Negative	Mixed Opinions	Positive	Very Positive	No Opinion /Don't Know	No Response or Ineligible Response	Total
Non-applicants	11	11	22	9	4	107	3	167
Applicants and enrollees	1	4	17	12	12	3	0	49
Total	12	15	39	21	16	110	3	216

Table C9. Attitude Item #1: "Wetlands are an important resource that should be protected." (Question #10)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	No Response or Ineligible Response	Total
Non-applicants	14	12	49	66	21	5	167
Applicants and enrollees	2	1	2	20	24	0	49
Total	16	13	51	86	45	5	216

Table C10. Attitude Item #2: Landowners have the right to do as they please on their own land.” (Question #10)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	No Response or Ineligible Response	Total
Non-applicants	1	9	18	68	65	6	167
Applicants and enrollees	0	3	5	24	17	0	49
Total	1	12	23	92	82	6	216

Table C11. Attitude Item #3: “The government has a responsibility to help landowners manage natural resources.” (Question #10)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	No Response or Ineligible Response	Total
Non-applicants	19	32	37	58	14	7	167
Applicants and enrollees	1	1	14	23	10	0	49
Total	20	33	51	81	24	7	216

Table C12. Attitude Item #4: “Economic progress requires that wetlands be drained.” (Question #10)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	No Response or Ineligible Response	Total
Non-applicants	20	53	65	16	8	5	167
Applicants and enrollees	17	15	14	3	0	0	49
Total	37	68	79	19	8	5	216

Table C13. Attitude Item #5: “Government involvement in the management of natural resources generally does more harm than good.” (Question #10)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	No Response or Ineligible Response	Total
Non-applicants	6	25	73	44	13	6	167
Applicants and enrollees	5	19	18	4	3	0	49
Total	11	44	91	48	16	6	216

Table C14. Attitude Item #6: "In general, landowners are allowed to get away with too much on their land." (Question #10)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	No Response or Ineligible Response	Total
Non-applicants	54	57	35	10	5	6	167
Applicants and enrollees	10	24	10	4	1	0	49
Total	64	81	45	14	6	6	216

Table C15. Attitude Item #7: "Wetlands have little, if any, value to society." (Question #10)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	No Response or Ineligible Response	Total
Non-applicants	21	67	51	17	6	5	167
Applicants and enrollees	27	16	4	2	0	0	49
Total	48	83	55	19	6	5	216

Table C16. Attitude Item #8: "Private property rights should be restricted when it is necessary to promote the greater good." (Question #10)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	No Response or Ineligible Response	Total
Non-applicants	35	61	39	23	4	5	167
Applicants and enrollees	12	15	12	8	2	0	49
Total	47	76	51	31	6	5	216

Table C17. Attitude Item #9: "Management of natural resources should generally be left to the free market." (Question #10)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	No Response or Ineligible Response	Total
Non-applicants	6	38	59	49	10	5	167
Applicants and enrollees	4	21	9	13	2	0	49
Total	10	59	68	62	12	5	216

Table C18. Attitude Item #10: "Destroying wetlands upsets the balance of nature." (Question #10)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	No Response or Ineligible Response	Total
Non-applicants	5	18	52	65	22	5	167
Applicants and enrollees	2	1	10	22	14	0	49
Total	7	19	62	87	36	5	216

Table C19. Attitude Item #11: "Private property rights are among the most important rights we have." (Question #10)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	No Response or Ineligible Response	Total
Non-applicants	5	3	13	70	71	5	167
Applicants and enrollees	1	1	3	22	22	0	49
Total	6	4	16	92	93	5	216

Table C20. Attitude Item #12: "Without government involvement, many natural resources would be overused." (Question #10)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	No Response or Ineligible Response	Total
Non-applicants	10	34	53	55	10	5	167
Applicants and enrollees	1	11	11	21	5	0	49
Total	11	45	64	76	15	5	216

Table C21. Information Source #1: Family, friends, and neighbors (Question #11)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	13	22	56	48	7	21	167
Applicants and enrollees	5	3	26	15	0	0	49
Total	18	25	82	63	7	21	216

Table C22. Information Source #2: Newspapers with local distribution (Question #11)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	31	44	49	7	16	20	167
Applicants and enrollees	10	19	17	1	2	0	49
Total	41	63	66	8	18	20	216

Table C23. Information Source #3: Newspapers with statewide distribution (Question #11)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	36	38	48	10	14	21	167
Applicants and enrollees	12	16	16	5	0	0	49
Total	48	54	64	15	14	21	216

Table C24. Information Source #4: Newspapers with nationwide distribution (Question #11)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	39	53	35	5	15	20	167
Applicants and enrollees	17	18	11	3	0	0	49
Total	56	71	46	8	15	20	216

Table C25. Information Source #5: Local Soil and Water Conservation District (Question #11)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	10	19	58	45	16	19	167
Applicants and enrollees	1	5	18	22	3	0	49
Total	11	24	76	67	19	19	216

Table C26. Information Source #6: Local trade organizations (Question #11)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	22	26	56	27	16	20	167
Applicants and enrollees	7	18	12	7	5	0	49
Total	29	44	68	34	21	20	216

Table C27. Information Source #7: Local OSU extension office (Question #11)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	6	17	58	48	17	21	167
Applicants and enrollees	4	4	16	22	2	1	49
Total	10	21	74	70	19	22	216

Table C28. Information Source #8: Local office of the NRCS (Question #11)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	14	23	50	33	27	20	167
Applicants and enrollees	2	0	14	33	0	0	49
Total	16	23	64	66	27	20	216

Table C29. Information Source #9: State agencies (Question #11)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	16	14	59	45	14	19	167
Applicants and enrollees	3	2	18	24	2	0	49
Total	19	16	77	69	16	19	216

Table C30. Information Source #10: National trade or professional organizations (Question #11)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	30	47	38	9	23	20	167
Applicants and enrollees	12	18	14	3	2	0	49
Total	42	65	52	12	25	20	216

Table C31. Information Source #11: National environmental organizations (Question #11)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	41	47	30	10	19	20	167
Applicants and enrollees	12	13	17	5	2	0	49
Total	53	60	47	15	21	20	216

Table C32. Contact with county-level NRCS agents (Question #12)

	No	Yes	No Response	Total
Non-applicants	126	36	5	167
Applicants and enrollees	0	49	0	49
Total	126	84	5	216

Table C33. Frequency of contact with county-level NRCS agents (Non-applicants: Question #14)

	Never	Once per year or less	Once every few months	Once per month	2-3 times per month	Once per week or more	No response/ ineligible response	Total
Non-applicants	125	22	8	4	1	0	7	167
Applicants and enrollees	0	12	31	2	4	0	0	49
Total	125	34	39	6	5	0	7	216

Table C34. Degree of similarity (“homophily”) with county-level NRCS agent (Question #15)

	Not at all	Only a little	Moderate Degree	Just like	Don't Know/ Can't Say	No response/ ineligible response	Total
Non-applicants	2	6	12	9	5	133	167
Applicants and enrollees	2	2	17	26	2	0	49
Total	4	8	29	35	7	133	216

Table C35. Overall level of trust in county-level NRCS agent (Question #16)

	Never trust what they say	Sometimes trust what they say	Usually trust what they say	Always trust what they say	Don't Know/Can't Say	No response/ ineligible response	Total
Non-applicants	2	8	16	8	1	132	167
Applicants and enrollees	2	1	30	15	1	0	49
Total	4	9	46	23	2	132	216

Table C36. Aware of the Wetlands Reserve Program (Non-applicant: Question #17)

	Not Aware	Aware	No response/ ineligible response	Total
Non-applicants	95	63	9	167
Applicants and enrollees	0	49	0	49
Total	95	112	9	216

Table C37. Knowledge about the WRP (Non-applicant: Question #18)

	Nothing	A little	Some	A lot	Total
Non-applicants	13	32	14	2	167

Table C38. Contact with county-level NRCS employee about the WRP (Non-applicant: Question #19; Applicant and Enrollee: Question #17)

	No	Yes	No response/ ineligible response	Total
Non-applicants	58	9	100	167
Applicants and enrollees	8	41	0	49
Total	66	50	100	216

Table C39. Contact with county-level NRCS employee initiated by: (Non-applicant: Question #19; Applicant and Enrollee: #18)

	Landowner	NRCS agent	Don't know/ Can't say	No response/ ineligible response	Total
Non-applicants	5	1	3	158	167
Applicants and enrollees	35	3	3	8	49
Total	40	4	6	166	216

Table C40. Source of awareness of the WRP (Non-applicant: Question #20; Applicant and enrollee: Question #22)

	Family, etc.	Media Story	Media Ad	Co. NRCS Empl.	State NRCS Empl.	NRCS Broch./ Pamph.	NRCS Web	Other	>1	No Resp.	Total
Non-applicants	20	11	6	7	0	5	1	5	2	110	167
Applicants/ enrollees	19	6	0	12	1	2	0	6	3	0	49
Total	39	17	6	19	1	7	1	11	5	110	216

Table C41. Landowner intent with respect to WRP (Non-applicant: Question #21)

	Never Considered whether to apply	Decided to apply	Decided not to apply	Not decided whether to apply	No Response/ Ineligible Response	Total
Non-applicants	38	2	10	8	109	167

Table C42. Decision not to apply to the program--Importance of factor #1: "Lack of information about the program." (Non-applicant: Question #22)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	6	9	3	9	8	132	167

Table C43. Decision not to apply to the program--Importance of factor #2: "Lack of suitable areas on my land." (Non-applicant: Question #22)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	6	3	3	10	12	133	167

Table C44. Decision not to apply to the program--Importance of factor #3: "Too many restrictions on land use." (Non-applicant: Question #22)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	2	5	5	11	12	132	167

Table C45. Decision not to apply to the program--Importance of factor #4: “Expected easement payment too small.” (Non-applicant: Question #22)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	4	7	5	2	17	132	167

Table C46. Decision not to apply to the program--Importance of factor #5: “Expected assistance with restoration too small.” (Non-applicant: Question #22)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	5	7	2	6	15	132	167

Table C47. Decision not to apply to the program--Importance of factor #6: “Reluctance to sell land/rights to the government.” (Non-applicant: Question #22)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	0	4	4	17	10	132	167

Table C48. Decision not to apply to the program--Importance of factor #7: “Property and/or estate tax considerations.” (Non-applicant: Question #22)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	5	11	2	4	13	132	167

Table C49. Decision not to apply to the program--Importance of factor #8: “Considerations related to inheritance.” (Non-applicant: Question #22)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	4	8	4	5	14	132	167

Table C50. Decision not to apply to the program--Importance of factor #9: “Discouragement by family friends, or neighbors.” (Non-applicant: Question #22)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	12	7	3	2	11	132	167

Table C51. Decision not to apply to the program--Importance of factor #10: “Discouragement by the NRCS.” (Non-applicant: Question #22)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Non-applicants	12	6	1	0	16	132	167

Table C52. Year of first application to the WRP (Applicant and enrollee: Question #19)

	'94-'95	'96-'97	'98-'99	'00-'01	'02-'03	'04-'05	'06-'07	No Response or Ineligible Response	Total
Applicants and enrollees	3	2	6	8	11	10	5	4	49

Table C53. Length of ownership prior to application (Applicant and enrollee: Question #20)

	0-3 years	4-6 years	7-9 years	10-20 years	21-30 years	Over 30 years	No Response or Ineligible Response	Total
Applicants and enrollees	17	4	3	10	6	7	2	49

Table C54. Type of easement (Applicant and enrollee: Question #21)

	Permanent Easement	30 year Easement	10 year Cost-Share	More than 1 type	Don't Know	Total
Applicants and enrollees	32	5	5	2	5	49

Table C55. Decision to apply to the WRP—Importance of factor #1: “Environmental benefits to the community (flood control, water quality, etc.)” (Applicant and enrollee: Question #23)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Applicants and enrollees	5	10	22	10	2	0	49

Table C56. Decision to apply to the WRP—Importance of factor #2: “Wildlife conservation benefits to the community.” (Applicant and enrollee: Question #23)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Applicants and enrollees	1	3	16	28	1	0	49

Table C57. Decision to apply to the WRP—Importance of factor #3: “Natural beauty/aesthetic benefits.” (Applicant and enrollee: Question #23)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Applicants and enrollees	2	3	20	22	1	1	49

Table C58. Decision to apply to the WRP—Importance of factor #4: “Personal use of the wetlands for hunting or other recreational activities.” (Applicant and enrollee: Question #23)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Applicants and enrollees	0	2	11	35	1	0	49

Table C59. Decision to apply to the WRP—Importance of factor #5: “Profit from rental of the wetlands for hunting or other recreational activities.” (Applicant and enrollee: Question #23)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Applicants and enrollees	21	10	9	7	0	2	49

Table C60. Decision to apply to the WRP—Importance of factor #6: “Assistance with restoration of the wetlands.” (Applicant and enrollee: Question #23)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Applicants and enrollees	0	1	13	34	1	0	49

Table C61. Decision to apply to the WRP—Importance of factor #7: “Property or estate tax considerations.” (Applicant and enrollee: Question #23)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Applicants and enrollees	23	11	7	3	4	1	49

Table C62. Decision to apply to the WRP—Importance of factor #8: “Easement payment.” (Applicant and enrollee: Question #23)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Applicants and enrollees	11	6	14	15	3	0	49

Table C63. Decision to apply to the WRP—Importance of factor #9: “Encouragement of family, friends, and neighbors.” (Applicant and enrollee: Question #23)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Applicants and enrollees	16	15	9	6	2	1	49

Table C64. Decision to apply to the WRP—Importance of factor #10: “Encouragement of the NRCS.” (Applicant and enrollee: Question #23)

	No Import.	Low Import.	Moderate Import.	High Import.	Don't Know	No Response or Ineligible Response	Total
Applicants and enrollees	10	12	15	10	2	0	49

Table C65. Acres included in site (Applicant and enrollee: Question #25)

	0 - 25 acres	26 - 50 acres	51 - 100 acres	101 - 500 acres	501 - 1,000 acres	More than 1,000 acres	No response or ineligible response	Total
Applicants and enrollees	3	3	10	24	3	1	5	49

Table C66. Total easement price (Enrollee: Question #26)

	\$25,000 or less	\$25,001-\$50,000	\$50,001-\$75,000	\$75,001-\$100,000	\$100,001-\$500,000	More than \$500,000	No response or ineligible response	Total
Enrollees	4	5	4	6	7	1	13	40

Table C67. Rating of assistance provided by the NRCS (Applicant: Question #26; Enrollee: Question #27)

	Poor	Fair	Good	Excellent	Don't Know	No Response or Ineligible Response	Total
Applicants and enrollees	3	7	19	20	0	0	49

Table C68. Rating of communication with the NRCS (Applicant: Question #27; Enrollee: Question #28)

	Poor	Fair	Good	Excellent	Don't Know	No Response or Ineligible Response	Total
Applicants and enrollees	4	8	23	14	0	0	49

Table C69. Overall rating of experience with the WRP (Applicant: Question #28; Enrollee: Question #29)

	Poor	Fair	Good	Excellent	Don't Know	No Response or Ineligible Response	Total
Applicants and enrollees	6	8	15	20	0	0	49

Table C70. Application outcome (Applicant: Question #29)

	Under review	Withdrew	Ruled Ineligible	Eligible/ No funding	Rejected easement offer	Plan to enroll	Total
Applicants	1	0	0	2	1	0	4

Table C71. Application status (Enrollee: Question #30)

	Cont. Signed	Developing Rest. Plan	Rest. Plan Complete	Begun Rest. Work	Project Complete	Other or Don't Know	No Resp.	Total
Enrollees	4	1	4	8	26	4	1	48*

*Three enrollees reported on the status of more than one project.

Table C72. Age (Non-applicant: Question #24; Applicant and enrollee: Question #31)

	Under 30	31-40	41-50	51-60	61-70	Over 70	No Response or Ineligible Response	Total
Non-applicants	1	13	26	43	39	35	10	167
Applicants and enrollees	0	5	8	18	9	9	0	49
Total	1	18	34	61	48	44	10	216

Table C73. Gender (Non-applicant: Question #25; Applicant and enrollee: Question #32)

	Male	Female	No Response	Total
Non-applicants	127	33	7	167
Applicants and enrollees	48	1	0	49
Total	175	34	7	216

Table C74. Length of tenure in county of residence (Non-applicant: Question #27; Applicant and enrollee: Question #34)

	0-5 years	6-10 years	11-20 years	21-30 years	31-40 years	Over 40 years	No Response or Ineligible Response	Total
Non-applicants	9	8	25	15	19	82	9	167
Applicants and enrollees	0	3	4	9	10	21	2	49
Total	9	11	29	24	29	103	11	216

Table C75. Membership in conservation or environmental organizations (Non-applicant: Question #29; Applicant and enrollee: Question #36)

	Not a Member	Member	No Response	Total
Non-applicants	150	12	5	167
Applicants and enrollees	23	26	0	49
Total	173	38	6	216

Table C76. Outdoor recreational activities (Non-applicant: Question #30; Applicant and enrollee: Question #37)

	Fishing	Duck Hunting	Other Game Hunting	Hiking and Camping	Bird-watching	Other	No Response or Ineligible Response
Non-applicants	96	21	73	39	26	16	6
Applicants and enrollees	38	31	41	21	22	4	0
Total	134	52	114	60	48	20	6

Table C77. Has visited wetlands for recreation (Non-applicant: Question #31; Applicant and enrollee: Question #38)

	No	Yes	No Response	Total
Non-applicants	130	30	7	167
Applicants and enrollees	17	31	1	49
Total	147	61	8	216

Table C78. Highest level of education reached (Non-applicant: Question #32; Applicant and enrollee: Question #39)

	Some High School or less	High School Diploma/ GED	Some College	Bachelor's Degree	Graduate Degree	No response or ineligible response	Total
Non-applicants	9	40	45	37	28	8	167
Applicants and enrollees	3	8	7	12	19	0	49
Total	12	48	52	49	47	8	216

Table C79. Annual household income (Non-applicant: Question #33; Applicant and enrollee: Question #40)

	\$10,000 or less	\$10,001 to \$20,000	\$20,001 to \$35,000	\$35,001 to \$50,000	\$50,001 to \$100,000	More than \$100,000	No response or ineligible response	Total
Non-applicants	3	7	21	24	46	41	25	167
Applicants and enrollees	0	1	4	5	14	23	2	49
Total	3	8	25	29	60	64	27	216

Table C80. Percent of household income derived from the land (Non-applicant: Question #34; Applicant and enrollee: Question #41)

	0 to 20%	21 to 40%	41 to 60%	61 to 80%	81 to 100%	No response or ineligible response	Total
Non-applicants	110	19	8	4	9	17	167
Applicants and enrollees	36	4	3	1	4	1	49
Total	146	23	11	5	13	19	216

Table C81. Family member expected to inherit (Non-applicant: Question #35; Applicant and enrollee: Question #42)

	No	Yes	Don't know/ can't say	No response or ineligible response	Total
Non-applicants	12	123	24	8	167
Applicants and enrollees	2	42	5	0	49
Total	14	165	29	8	216

Table C82. Household size (Non-applicant: Question #36; Applicant and enrollee: Question #43)

	1	2	3	4	5	> 5	No response or ineligible response	Total
Non-applicants	22	89	22	13	5	4	12	167
Applicants and enrollees	5	24	6	8	3	3	0	49
Total	27	113	28	21	8	7	13	216

VITA

Brian Paul Cross

Candidate for the Degree of

Master of Science

Thesis: LANDOWNER PARTICIPATION IN THE WETLANDS RESERVE PROGRAM:
EVIDENCE FROM NINE OKLAHOMA COUNTIES

Major Field: Environmental Science

Biographical:

Date of Birth: February 25, 1974

Place of Birth: Tulsa, OK

Education:

Completed the requirements for the Master of Science in Environmental Science at Oklahoma State University, Stillwater, Oklahoma in May 2009.

University of Utah (Sept. 1996-June 1998): Ecology and Evolution Program, Advisor: Jon Seger, Ph.D. Focus: behavioral ecology of social insects

Organization for Tropical Studies (Jan.-Mar. 1998): Tropical Biology 98-1 (field course in Costa Rica)

Completed the requirements for the Bachelor of Science (*summa cum laude*) in Zoology at the University of Oklahoma, Norman, Oklahoma in July 1996.

Work Experience:

Adjunct Science Instructor, Tulsa Community College (Aug. 1999-Mar. 2002 and Jan. 2007 - Present): Teach introductory courses in biology, zoology, and environmental science.

Environmental Education Extension Agent, Peace Corps (Mar. 2002-Dec. 2003): Served as a village-based volunteer in Sénégal, West Africa.

Science Teacher, Hebrew Academy of Greater Hartford (Oct. 1998-June 1999): Taught science in grades 5-8. Organized school science fair.

Honors, Awards, and Grants

Jimmie Pigg Environmental Policy Research Assistantship (2007)

National Science Foundation Graduate Research Fellow (1997)

Phi Beta Kappa (University of Oklahoma, 1996)

Name: Brian Paul Cross

Date of Degree: May, 2009

Institution: Oklahoma State University

Location: Stillwater, Oklahoma

Title of Study: LANDOWNER PARTICIPATION IN THE WETLANDS RESERVE PROGRAM:
EVIDENCE FROM NINE OKLAHOMA COUNTIES

Pages in Study: 132

Candidate for the Degree of Master of Science

Major Field: Environmental Science

Scope and Method of Study:

The Wetlands Reserve Program (WRP) is a federal wetlands conservation program administered by the Natural Resources Conservation Service (NRCS), an agency within the United States Department of Agriculture. Through this program, the federal government purchases development and agricultural rights to privately owned wetlands that have been drained for cultivation or otherwise altered in a manner impairing the natural hydrology. Enrolled land is restored to natural wetland function by the NRCS and its partner agencies and organizations. Because the WRP is a voluntary, incentive-based program, it is important to understand the variables that affect awareness of the program and the willingness of landowners to participate. A mail survey examining landowner attitudes; socioeconomic characteristics; land operation variables; information sources; and experience with wetlands, conservation programs, and the NRCS was conducted in nine counties in eastern and central Oklahoma. Those who had applied to the program and those who had considered applying were asked about their reasons for applying or not applying. The survey sample included WRP enrollees in the nine counties along with a stratified random sample of non-enrollees owning land with hydric soils. The results of the survey were used to develop multivariate logistic regression models predicting awareness of the WRP and application to the program.

Findings and Conclusions:

Several variables proved to be important predictors of awareness and application. In the final model for awareness of the WRP, duck hunting and contact with an NRCS district conservationist (DC) were the most important predictor variables. Duck hunters and those in contact with DCs were more likely to be aware of the WRP. Contact with the DCs was itself predicted by larger landholdings (or percent of annual income derived from the land), participation in other conservation programs, and awareness of large wetland projects. In the final model for application to the WRP, participation in other conservation programs, awareness of large wetland projects, and a favorable attitude towards wetlands were all important positive predictors. Although not included in the final model, how the landowner learned about the WRP and the landowner's attitude towards government involvement in the management of natural resources were also potentially important predictors.

Those having applied to the WRP rated wildlife benefits, personal recreation benefits, and assistance with restoration as the most important reasons for their decision to apply. Those rejecting involvement with the program often did so because of perceived ineligibility, concerns about land use restrictions, or a negative overall attitude towards wetlands and government. Economic considerations were not rated as highly, but their importance is difficult to determine without more data on applicants and their responses to economic factors such as land values and assessed easement values.

ADVISER'S APPROVAL: Dr. William J. Focht
