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# IMPLICATIONS FOR SPECIES RECOVERY



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JACK H. BERRYMAN INSTITUTE FOR WILDLIFE DAMAGE MANAGEMENT  
UTAH STATE UNIVERSITY EXTENSION  
UTAH STATE UNIVERSITY, LOGAN, UTAH

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The Jack H. Berryman Institute is housed in the Department of Wildland Resources as part of the College of Natural Resources and Extension Service, at Utah State University. The Institute has a mission of working with public and private partners to seek and implements new strategies and technologies to better manage human-wildlife conflicts. The Institute fulfills its mission through an integrated research, extension, and education program.

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PUBLIC PERCEPTIONS REGARDING THE UTAH PRAIRIE DOG  
AND ITS MANAGEMENT: IMPLICATIONS FOR SPECIES RECOVERY

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2006

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## EXECUTIVE SUMMARY

The Utah prairie dog (*Cynomys parvidens*), federally listed as a threatened species, has experienced minimal recovery since implementation of a 1991 recovery plan. Prairie dogs that inhabit private land cannot be counted toward recovery goals, yet over 70 percent of the entire population inhabits private land. The plan is currently being reevaluated and prairie dogs on private lands may be considered toward recovery goals. Consequently, information regarding public perceptions about the species and its management is needed. In particular more information is needed regarding agriculture producer's interest in various conservation measures that can be implemented to manage the Utah prairie dog.

To obtain this information, we surveyed Utah residents to identify public attitudes and knowledge regarding the species and its management with particular emphasis on options for conservation on private lands. Our survey population included 600 agricultural producers and 600 residents of rural counties within the range of the Utah prairie dog; and 600 residents of a metropolitan area.

Rural and agricultural respondents tended to be more knowledgeable and also more opinionated about Utah prairie dogs than urban stakeholders. Most agriculture respondents reported high levels of wildlife damage and low interest in working with state and federal agencies to manage the species. They did, however, express interest in working with non-regulatory organizations like the Utah State University Extension Service and Utah Farm Bureau Federation to manage conflict surrounding the Utah prairie dog. While there was not strong support for landowner damage compensation, those who did support compensation overwhelmingly felt that private conservation groups should provide the funds.

These findings suggest that if private lands are to be included in Utah prairie dog population recovery goals, outreach efforts to engage and educate stakeholders should be made by non-regulatory personnel. Additionally, implementation of measures to mitigate the damage caused by Utah prairie dogs would likely increase landowner acceptance of conservation measures.

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## INTRODUCTION

The Utah prairie dog currently inhabits eight counties in southwestern Utah. The species was listed as endangered in 1973 pursuant to the Endangered Species Act (ESA) of 1969, but was down-listed to threatened in 1984 after substantial numbers were found inhabiting private lands [U.S. Fish and Wildlife Service (USFWS) 1991]. The decline in Utah prairie dog numbers are commonly attributed to large-scale habitat changes, drought, disease [most notably plague (*Yersinia pestis*)] long-term climatic changes, eradication efforts, and overgrazing by domestic livestock (USFWS 1991).

A long-term Utah prairie dog recovery plan was approved by the USFWS in 1991 (USFWS 1991). The plan included population recovery goals for three areas in Utah; the West Desert, the Paunsaugunt Plateau, and the Awapa Plateau (USFWS 1991). The plan also stipulated that only those populations that inhabit federal land could be counted toward recovery. This stipulation was put in place to address objections raised by communities and landowners.

The Utah prairie dog recovery plan has resulted in negligible progress toward species recovery. This has prompted the USFWS to reevaluate the conservation actions identified in the plan (Elise Boeke, USFWS, Salt Lake City, UT, personal communication, 2006). Because over 70 percent of Utah prairie dogs are on private lands, the new plan may incorporate provisions for private landowners to participate more directly in the recovery process.



Photo by: R. Dwayne Elmore

Little information is available regarding the actual dollar amount and types of damage caused by the Utah prairie dog. Because of its foraging and burrowing activity and its status as threatened, the species is in constant conflict with ranching, farming, and development concerns. Information obtained from a survey of stakeholders could assist managers in identifying and implementing conservation actions that will embrace public concerns and benefit the Utah prairie dog. This information could identify the incentives needed to conserve Utah prairie dogs on private land.

We conducted this research to determine: 1) perceptions among stakeholder groups (urban Utah residents, residents of rural counties within Utah prairie dog range, and agricultural producers within Utah prairie dog range) regarding the Utah prairie dog and the conservation of the species, 2) levels of knowledge concerning the Utah prairie dog, and 3) agriculture producer willingness to participate in conservation measures for the Utah prairie dog.

## STUDY AREA

Utah prairie dogs are found in nine counties in southwestern Utah. Those counties are: Beaver, Garfield, Iron, Kane, Millard, Piute, Sanpete, Sevier, and Wayne. Because of the limited distribution in Sanpete and Millard counties, we selected residents of Beaver, Garfield, Iron, Kane, Piute, Sevier, and Wayne counties only. Additionally, urban residents outside of the range of the Utah prairie dog were surveyed to determine how their perceptions and values may differ from people in the six southwestern counties. Salt Lake County was chosen because it represents the largest metropolitan area most removed from agricultural concerns within Utah.

## METHODS

We developed two mail-back surveys to conduct this study. These surveys and the study methodology were approved by the Institutional Review Board at Utah State University (IRB # 1167). We mailed surveys to a stratified random sample of 600 individuals in each strata. Strata included agricultural producers who live within the historic range of the Utah prairie dog, rural residents within the historic range of the Utah prairie dog, and urban residents in Salt Lake County. We chose 600 for each population to ensure adequate sample size for analysis, given recent concerns regarding low return rates for mail surveys (Connelly et al., 2003).

Names, addresses, and telephone numbers for the urban and rural residents were obtained from a survey sampling firm (Survey Sampling Inc., Fairfield, Connecticut). The study population was therefore limited to households that are listed in telephone directories. The names for the rural and urban component were randomly drawn from a pool of all names for the counties of interest. The names for the agriculture survey were drawn proportionally from each county so that counties with higher populations of agriculture producers were adequately represented. We contacted the U.S. Department of Agriculture

Farm Service Agency to obtain names and addresses for agriculture producers within the range of the Utah prairie dog. Their list includes all agriculture producers who have utilized any Farm Bill program, and was the most complete list available.

The rural and urban populations both received identical surveys. This survey consisted of 23 questions, with multiple subquestions. These questions were designed to examine respondents' knowledge and feelings about the management of the species, feelings about the Endangered Species Act (ESA), views of nature, wildlife damage assessment, and general demographics. The agriculture population received a more detailed survey consisting of 36 questions with multiple subquestions. In addition to the general questions detailed above, this survey contained questions regarding farm operations and details, levels of farm damage caused by the Utah prairie dog, and interest in conservation options for the management of the Utah prairie dog.

An initial introductory letter was mailed during February to all survey recipients (Dillman 2000). The letter informed the recipients that a mailback questionnaire would follow, the reasons for the survey, and contact information. A survey, a self-addressed postage-paid envelope, and a cover letter were mailed one week later. The cover letter again described the survey's purpose. One week later a reminder postcard was sent to all survey recipients. A second survey was sent to all nonrespondents three weeks after the original mailing date (Dillman 2000).

## RESULTS

### **Response Rate**

Urban residents returned 196 surveys (82 undeliverable and 10 unusable), resulting in an adjusted response rate of 46%. Rural residents returned 276 surveys (89 undeliverable and 9 unusable) resulting in an adjusted response rate of 61%. Agriculturists returned 296 surveys (59 undeliverable and 12 unusable), resulting in an adjusted response rate of 59%.

### **Species Knowledge**

Few (13%) urban respondents knew the Utah prairie dog was a separate species of prairie dog, and most (65%) were unsure if it *should* be considered a unique species. In comparison, 46% of rural residents and 48% of agriculturists knew it was a separate species. However, many rural (47%) and agriculture (57%) respondents thought it should not be considered a unique species. Most rural (74%) and agriculture (74%) respondents knew it was a listed species under the ESA compared to 23% of urban respondents. Only 30% of urban respondents and 12% of rural residents thought the species should be listed. Few agriculturists (4%) thought it should be listed.



## Attitudes and Opinions

When asked if they believed that the Utah prairie dog counts conducted by the DWR were accurate, most (70%) of the urban respondents were not sure. Only 8% of the rural and 7% of the agriculture respondents thought the counts were accurate. Most (66%) agriculture respondents believed that agriculture producers who had prairie dogs on their land should be compensated for damages, while rural respondents were equally split between agreement and disagreement. Most (68%) urban respondents were opposed to compensating agriculture producers. Most agriculture (74%) and rural (50%) respondents, and 33% of urban respondents felt that conservation/environmental groups should fund this compensation if it was provided. Federal government, state government, and private insurance (in that order) were less preferred compensation sources for all 3 groups.

We also examined whether respondent involvement in agriculture operations influenced their support for compensation programs. Family members' involvement in agriculture did not significantly affect urban respondent's beliefs regarding compensation. Agriculture and rural respondents' views on compensation were significantly related to whether or not they currently were active in agriculture. Additionally, rural respondents' views on compensation were significantly related to whether or not they had family members active in agriculture.

Most (61%) agriculture respondents thought the Utah prairie dog should be only on public land, while 23% thought it should not be anywhere. Most rural (64%) respondents likewise believed it should be only on public land, and 23% thought it should be on both private and public lands. Most (58%) urban respondents believed it should be on both private and public land, and another 39% thought only public land should have Utah prairie dogs. For urban and rural respondents, family member involvement in agriculture had no significant effect on this belief. Likewise, for the rural and agriculture respondents, personal agriculture activity did not affect their belief regarding where Utah prairie dogs should be located.

Respondents differed regarding Utah prairie dog protection. Rural and agriculture respondents were more likely to support protection if prairie dogs did not interfere with their livelihood. Urban residents were more likely to believe prairie dogs should receive at least some protection (Figures 1, 2, and 3). The rural respondents differed from both the agriculture and the urban respondents on how they viewed the Utah prairie dog. Urban and agriculture respondents also differed from each other. The agriculture respondents held the most negative views; urban respondents held the most positive (Figures 1, 2, and 3).

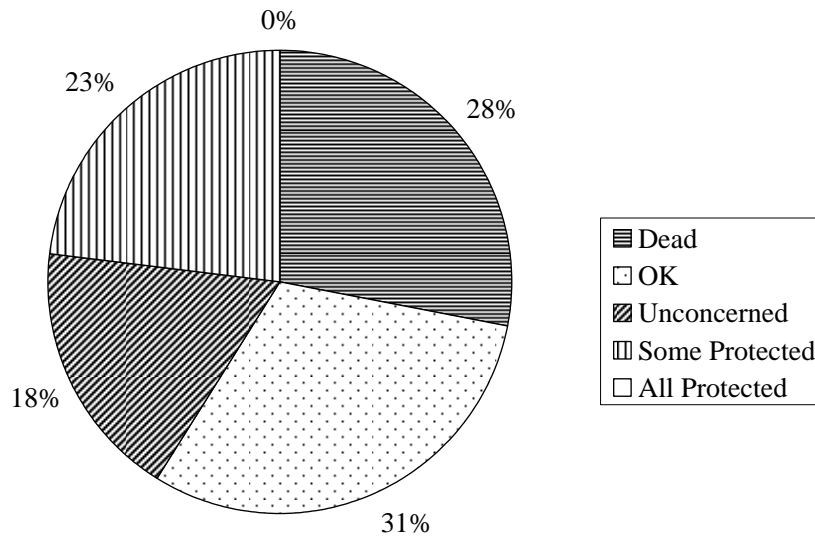


Figure 1. Agriculture respondents' beliefs regarding the Utah prairie dog. Choices were: the only good prairie dog is a dead prairie dog (Dead), they are OK as long as they do not interfere with my life (OK), live and let live (Unconcerned), they should be protected to some degree (Some Protected), and they should be protected at all costs (All Protected).

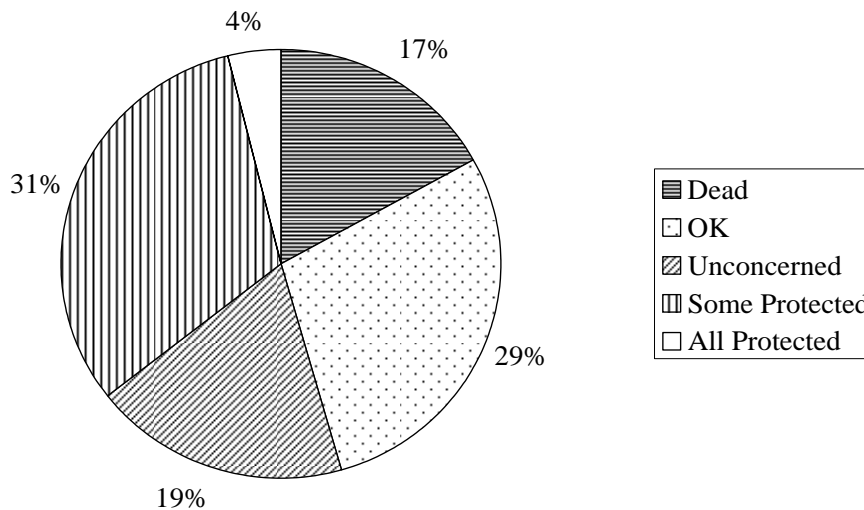


Figure 2. Rural respondents' beliefs regarding the Utah prairie dog. Choices were: the only good prairie dog is a dead prairie dog (Dead), they are OK as long as they do not interfere with my life (OK), live and let live (Unconcerned), they should be protected to some degree (Some Protected), and they should be protected at all costs (All Protected).

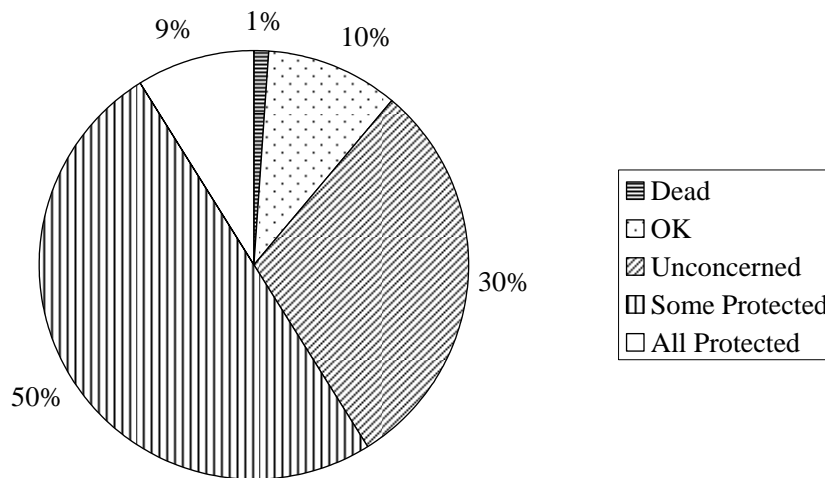


Figure 3. Urban respondents' beliefs regarding the Utah prairie dog. Choices were: the only good prairie dog is a dead prairie dog (Dead), they are OK as long as they do not interfere with my life (OK), live and let live (Unconcerned), they should be protected to some degree (Some Protected), and they should be protected at all costs (All Protected).

We found that for urban respondents, whether or not family members were active in agriculture was not related to how they felt about the Utah prairie dog. Furthermore, there was little correlation for the rural respondents for either family agriculture activity or personal agriculture activity. For agriculture respondents there was little relationship between whether or not they were currently engaged in agriculture and how they felt about the Utah prairie dog.

The agriculture respondents strongly agreed that although the original intent of the Endangered Species Act (ESA) was good, it is being misused, and threatens property rights (Figures 4, 5, and 6). About half thought it should be revoked. Most (64%) disagreed that it had been a success or that it should be maintained without change (76%). Rural respondents had similar opinions (Figure 6). The urban respondents also believed that the original intent was good; however, most were not sure if it is being misused (54%). Although many were uncertain, they generally did not believe the act should be revoked (Figure 6).

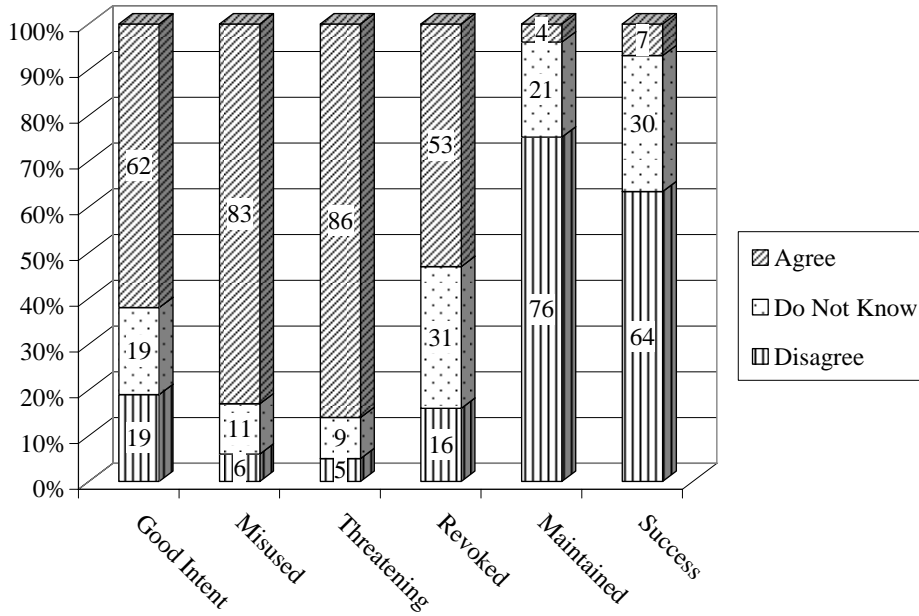


Figure 4. Agriculture respondents' beliefs on the Endangered Species Act. Statements were: the original intent was good (Good Intent), it is being misused (Misused), it threatens private property rights (Threatening), it should be revoked (Revoked), it should be maintained as is (Maintained), and the act has been a success (Success).

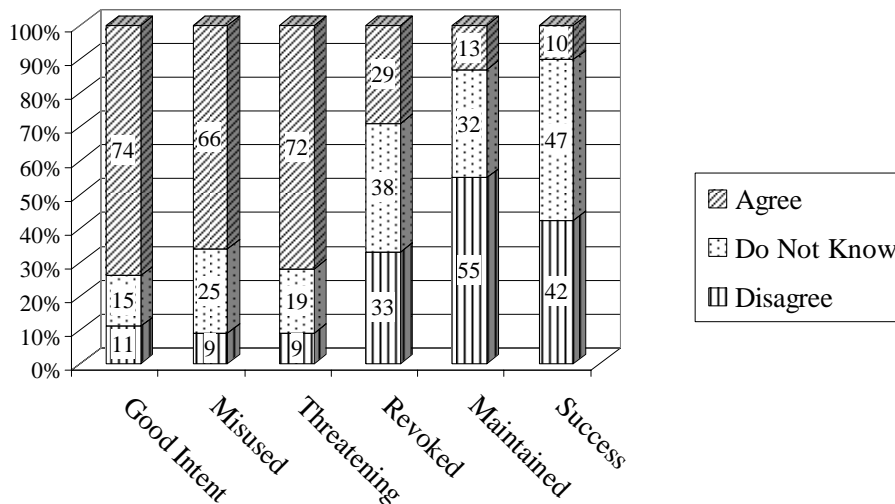


Figure 5. Rural respondents' beliefs on the Endangered Species Act. Statements were: the original intent was good (Good Intent), it is being misused (Misused), it threatens private property rights (Threatening), it should be revoked (Revoked), it should be maintained as is (Maintained), and the act has been a success (Success).

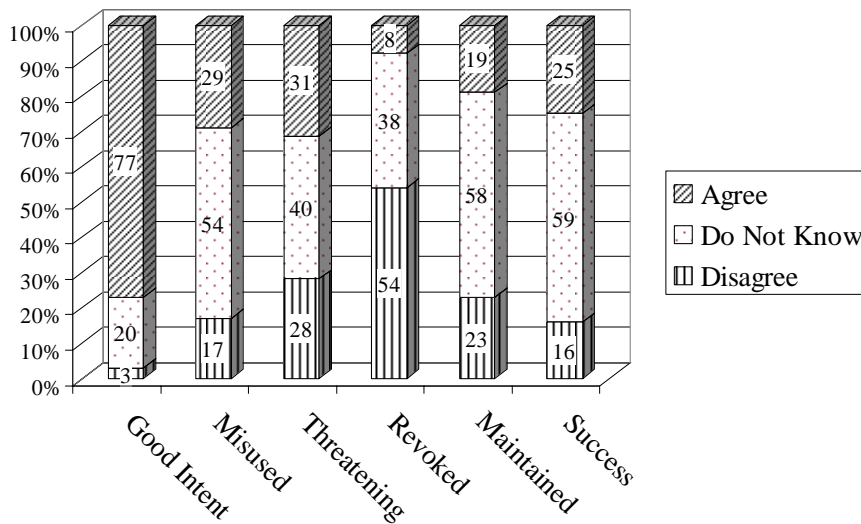


Figure 6. Urban respondents' beliefs on the Endangered Species Act. Statements were: the original intent was good (Good Intent), it is being misused (Misused), it threatens private property rights (Threatening), it should be revoked (Revoked), it should be maintained as is (Maintained), and the act has been a success (Success).

We asked our respondents to rank themselves regarding the proper relationship between wild animals and human society (wildlife/human scale). The scale went from 1 to 6, with 6 being that human needs always come first and 1 that wildlife needs always come first. The agriculture respondents were more likely to believe that human needs were more important. Rural residents were very similar in attitude. The urban respondents were nearly neutral in their attitude.

We tested whether this ranking affected the respondents' beliefs regarding the Utah prairie dog's right to exist in southern Utah, and how the respondent felt in general about the Utah prairie dog. Rural respondents' wildlife/human relationship ranking did affect whether or not they thought the Utah prairie dog had a right to exist in southern Utah. As the scale moved toward the human end, the respondent was more likely to feel the Utah prairie dog did not have a right to exist in southern Utah. As the scale moved toward the human end, the respondent was more likely to have more negative feelings. The agriculture respondents were similar in that there was a strong relationship between their opinion of the Utah prairie dog and their scale score. The relationship between the scale score and where they thought the Utah prairie dog should be in southern Utah was not important. The urban respondents' views regarding where they thought the Utah prairie dog should be in southern Utah were related their feelings about the species. As the scale moved toward the human end, the respondent was more likely to have more negative feelings toward the species.

## **Summary Agriculture Statistics**

Most agriculture respondents indicated that Utah prairie dogs were active on land that they ranched or farmed (62%), and half of those (34%) indicated that the prairie dogs affected their operation. After deleting outliers, the mean number of acres occupied by Utah prairie dogs was 435/operation. We then asked what types of damage Utah prairie dogs caused. Forage loss (29%), equipment damage (20%), horse injury (20%), and livestock injury (19%) were all indicated. Also, 11% reported loss of economic opportunity and 8% reported a loss of public AUM's (animal unit months).

We tested whether the presence of Utah prairie dogs on farmland influenced opinions regarding the Utah prairie dog. There was a negative correlation between the presence of Utah prairie dogs and the respondent's opinion regarding the species. We also tested whether presence was related to beliefs on compensation and beliefs regarding whether the species has a right to exist in southern Utah. While the species' presence on a respondent's land was related to where they thought the species should be in southern Utah, there was no relationship between presence and agreement with landowner compensation. Landowners who had Utah prairie dogs on their land were more likely to feel that the species did not have a place in southern Utah. Also, landowners who experienced more damage by the Utah prairie dog were more likely to hold negative views on the species, believe the species should not be on private lands, and believe that landowners should be compensated for losses.

## **Conservation Options**

The last series of questions for the agriculture population dealt with conservation and management options regarding the Utah prairie dog. Only 8% of our respondents had received Utah Division of Wildlife Resources assistance in managing Utah prairie dog conflicts. Of those one received technical advice, four had prairie dogs removed, and seventeen received prairie dog take permits. While only 8% had received help in the past, 27% were interested in assistance to compensate losses caused by prairie dogs (either financial or technical). Another 23% were not sure. We tested to see if respondents' interest in receiving assistance was related to presence of the species, damage caused, past assistance history, and the number of years the respondent had been involved in agriculture production. Those respondents who had Utah prairie dogs on their land, experienced damage, and who had received assistance in the past were more likely to be interested in assistance to compensate for losses. There was no relationship detected between willingness to receive assistance and number of years the respondent had been involved in agriculture production.

The Utah Division of Wildlife Resources, U.S. Fish and Wildlife Service, Bureau of Land Management, U.S. Forest Service, Natural Resources and Conservation Service, and USDA Wildlife Services all scored very similarly in regard to whether landowners were willing to work with the groups in regard to prairie dog conflicts (Figure 7). The two conservation groups scored lower. Nearly 74% and 68% had no interest in working

with these groups (respectively). Utah Farm Bureau Federation and Utah State University Extension Service had nearly identical ratings with 48% and 47% very willing to work with them, respectively.

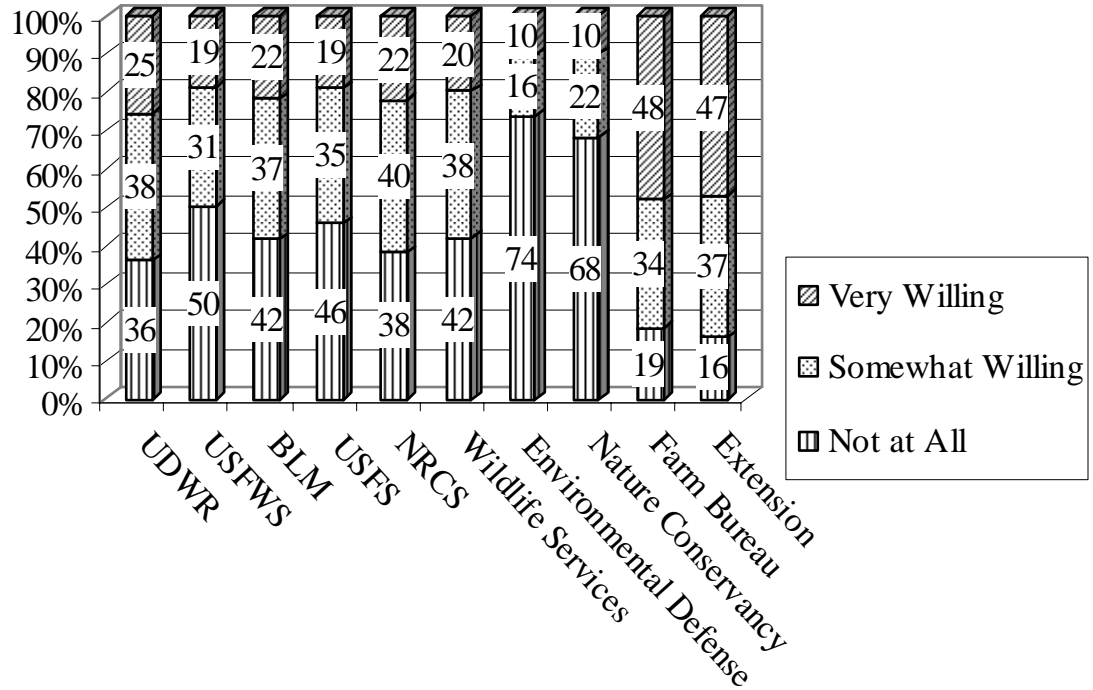


Figure 7. Agriculture respondent willingness to work with various organizations to manage conflict caused by Utah prairie dogs, 2005. Choices were: Utah Division of Wildlife Resources (UDWR), U.S. Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), U.S. Forest Service (USFS), Natural Resources and Conservation Service (NRCS), USDA Wildlife Services, Environmental Defense, Nature Conservancy, Utah Farm Bureau, and Utah State University Extension Service.

We asked what types of assistance would be most beneficial to the agriculture respondents. They could choose more than one option. Killing some prairie dogs was selected by 40% of respondents, with another 33% preferring to kill all prairie dogs. Approximately 24% wanted some prairie dogs relocated, and 26% wanted all prairie dogs relocated. Compensation of forage/crop loss, equipment damage, and livestock injury was selected by 38%, 28% and 30% respectively. About 19% wanted technical advice and another 8% wanted fencing of colonies. Nearly 24% were interested in range improvements in areas occupied by prairie dogs. Forty percent of respondents wanted relief from regulations and another 11% were interested in conservation easements or other tax relief measures.

When asked if they were interested in entering some of their land into a conservation easement, 89% said no, 6% somewhat willing, 1% very willing, and 4% not sure. We asked those who were interested how much the easement should be. Three respondents indicated \$10-\$25/acre/year, one indicated \$26-\$50/acre/year, 11 chose \$51-\$100/acre/year, and 20 chose >\$100/acre/year. Of these 21 respondents, 10 thought that 5-10 years was ideal, three chose 11-25 years, three chose 26-50 years, and five chose perpetuity. We then asked how many acres they would enroll. Seventeen respondents indicated 10-40 acres, four indicated 11-160 acres, four indicated 161-640 acres, and three indicated >640 acres. Unfortunately, there were too few respondents interested in conservation easements to allow more detailed analysis. When asked if they would be willing to allow Utah prairie dogs to be relocated on their land in exchange for financial compensation, only 4% said yes and another 10% were not sure. Of these, when asked how much compensation it would require, seven respondents indicated >\$100/acre/year, two thought \$51-\$100/acre/year was sufficient, and one thought \$26-\$50/acre/year was adequate. Unfortunately, there were too few respondents interested in relocations to allow more detailed analysis.

The final questions addressed the ESA. We asked whether the fear of restrictions under the act hindered their willingness to receive aid or assistance. Approximately 70% indicated it did. Thirty-four percent of respondents admitted they had in some way attempted to discourage Utah prairie dogs on their land to avoid regulatory problems.

## DISCUSSION

The results of this study show similar patterns as previous research in that those more affected by an issue (i.e., rural and agriculture respondents) were more knowledgeable about the species and aspects of its management. The rural and agriculture respondents were also more opinionated. This was expected, because issue salience causes individuals to have stronger opinions and feelings and be less neutral (Manfredo et al. 1992).

While most rural and agriculture respondents were aware that the Utah prairie dog was a listed species, many did not realize that it is a unique species. This brings into question public understanding or acceptance of the species concept. This was further reflected in many of the comments attached to the surveys where respondents indicated they did not know what a prairie dog was. It seems that many other rodent species were confused with prairie dogs. Many associated Utah prairie dogs with other rodents and made no distinction between the species.

While the majority of agriculture respondents agreed with the concept of damage compensation, only half of the rural respondents did, and less than one-third of the urban residents did. Further tests showed there was a strong association with participation in agriculture and acceptance of compensation programs. Therefore, those individuals not directly affected, do not favor this strategy. Our results are similar to those of Messmer and Schroeder (1996), who found that Utah alfalfa farmers were most interested in compensation and incentive programs rather than assistance and information programs. Based on land agricultural land values ( i.e., \$2500 /acre for irrigated alfalfa versus



\$60/acre for non-irrigated rangeland) alfalfa farmers could experience as much as 40 times more damage from prairie dogs in their alfalfa fields than on adjacent rangelands.

It has been suggested that compensation programs may lead to more damage issues and reliance on payments (Bulte and Rondeau 2005). Targeting payments toward conservation outcomes rather than compensating losses would be more beneficial to species recovery. These conservation payments should have strong landowner incentives to gain acceptance within the agricultural community. An interesting note is that in all three respondent groups, the most populace response was that conservation/environmental groups should be responsible for any compensation if it occurs. Private insurance was the least acceptable for all three groups.

We found that the urban respondents were neutral in attitude regarding the human/wildlife scale. Both the rural and agriculture respondents were inclined toward the human end of the scale. Our findings are likely due to the fact that two of the populations we sampled were very rural. Even the urban respondents indicated close cultural ties to agriculture production, and were not far removed from a rural background. Our results also show that a generalized summary of an environmental attitude scale does seem to be related to how respondents viewed the Utah prairie dog and its place in southern Utah. Caution should be exercised in utility of this finding. Attitude and intent to behave are not necessarily indicative of realized behavior (Bright et al., 1993). Targeting individuals for inclusion in Utah prairie dog management options based solely on this scale is not recommended.

Another interesting finding from this study is that there is widespread belief that the original intent of the ESA was good. Even most agriculture respondents held this belief. However, both the rural and agriculture groups believe it has been misused and threatens property rights. Urban residents did not believe the act should be revoked, but beyond that they seemed unsure of how successful it had been and if it needed reform. Both the rural and agriculture groups believed that reform was needed. From evaluating responses from ESA statements, agency effectiveness, and Utah prairie dogs' place in southern Utah, it would appear that most antagonism from southern Utah respondents is directed at the bureaucracy surrounding the Utah prairie dogs' listing, and not necessarily at the species itself. While damage issues are apparent from our results, a majority of landowners believe the species has a place in the ecosystem (albeit on public land).

The ESA listing of the Utah prairie dog possibly prevented further losses and possible extinction of the species. However, it appears that at present the ESA listing may be more of a hindrance to recovery for both the West Desert and Paunsaugunt recovery areas. As there are large populations of Utah prairie dogs on public land in the Awapa Plateau recovery area, and private land damage issues are not as widespread in that area, we will exclude it from discussion here. The other two recovery areas have great numbers of Utah prairie dogs on private lands and have generated great conflict. One-third of our agriculture respondents admitted they had taken action to discourage Utah prairie dogs on their land to avoid regulatory problems (i.e., ESA). From personal experience, we suspect

this number is actually higher. Additionally, 70% indicated that fear of restrictions under the ESA prevents them from receiving aid or assistance.



Photo by: Lynn Chamberlain

It could be argued that the ESA has prevented much higher prairie dog control on private land. However, from examining the comments and personal communication with ranchers, this is doubtful. We have found that most landowners are willing to tolerate prairie dogs within some reasonable limit. Exceptions to this may be in urban housing, golf courses, and cemeteries where no level of damage is viewed as acceptable. We speculate that landowners adjacent to land already occupied by the Utah prairie dog are more likely to limit its spread due to fears regarding the ESA.

We do not wish to imply that the species should be delisted without adequate recovery, nor that the ESA does not contribute to species recovery. What is needed is a better application of the act in regards to the Utah prairie dog. We conclude, as did Brook et al. (2003), that as presently implemented, the ESA listing is not aiding in recovery efforts on private lands and may in fact be detrimental. As most of the population is found on private lands, these should be of concern to managers.

Because of the low number of respondents who expressed interest in conservation easements and translocations, it is difficult to determine landowner characteristics to implement conservation strategy guidelines. It appears that most landowners are interested in control measures. However, a few successful case studies and the resultant peer communication likely could sway many landowners to consider conservation measures as long as the benefits outweighed the costs. Additionally, increasing the effectiveness of damage resolution would likely make landowners more willing to discuss management options to benefit the species.

## MANAGEMENT RECOMMENDATIONS

The results of this study show that the rural and urban respondents in Utah differ in how they view the Utah prairie dog. Those outside of agricultural operations tend to have positive feelings toward the species. Thus, there is public support for its management. Yet, those most affected by management actions have different attitudes and perceptions. Specifically, there exists a fear regarding the ESA and low trust levels for government organizations and conservation groups. Both constituent groups should be considered by the USFWS so that a plan is formulated which conserves the species but does so in a way acceptable and compatible with agricultural and rural community needs.

Based on the results of this study, we recommend that personal direct contact, rather than large-scale information programs, be initiated. The contact should be made by a trusted source such as Utah Farm Bureau or Utah State University Extension. We do not recommend that local Extension agents be that contact since close interpersonal relationships may hinder project success. However, local Extension agents would be beneficial as a liaison between landowners and an Extension specialist.

Additionally, efforts should be made to alleviate damage as much as possible under ESA restrictions. We recommend that actions taken on private lands should have some measurable contribution to species recovery within the plan. If damage compensation is necessary, outside sources of revenue (non-government) should be sought so that landowners will be more responsive.

We believe that private lands are necessary for the recovery of this species. We encourage the Utah prairie dog recovery team to carefully consider landowners in the recovery process. Steps should be taken so that adequate incentives are in place to outweigh damage incurred.

If several projects can be completed to demonstrate the success of this approach in each recovery area, we anticipate landowner interest in participating will increase. Initial contacts should be targeted to those landowners that have received assistance from the Utah Division of Wildlife Resources in the past, because they are more likely to be responsive. Many Farm Bill programs exist that could be used to benefit Utah prairie dogs and landowners simultaneously. These programs need to be brought to the attention of landowners in affected areas. Additionally, the Safe Harbor program should be further explored for this species.

Lastly, we believe that much antagonism could be alleviated if certain high-conflict areas could be managed more intensively to resolve damage. Areas such as cemeteries, golf-courses, hospitals, and existing homes have been identified as areas where tolerance of damage is low. Tight restrictions under the ESA continue to aggravate residents of affected communities. Every effort should be made in these areas to reduce damage if public sentiment is to change.

## LITERATURE CITED

- Brook, A., M. Zint, and R. DeYoung. 2003. Landowners' response to an Endangered Species Act listing and implications for encouraging conservation. *Conservation Biology* 17:1638-1649.
- Bright, A. D., M. J. Manfredro, M. Fishbein, and A. Bath. 1993. Applications of the theory of reasoned action to the National Park Service's controlled burn policy. *Journal of Leisure Research* 25:263-280.
- Connelly, N. A., T. L. Brown, and D. J. Decker. 2003. Factors affecting response rates to natural resource-focused mail surveys: empirical evidence of declining rates over time. *Society and Natural Resources* 16:541-549.
- Dillman, D. A. 2000. *Mail and Internet surveys: the tailored design method*. Second edition. Wiley John and Sons, New York, USA.
- Manfredro, M. J., S. M. Yaun, and F. A. McGuire. 1992. The influence of attitude accessibility on attitude-behavior relationships: implications for recreation research. *Journal of Leisure Research* 24:157-170.
- Messmer, T. A., and S. Schroeder. 1996. Perceptions of Utah alfalfa growers about wildlife damage to their hay crops: implications for managing wildlife on private land. *Great Basin Naturalist* 56:254-260.
- U. S. Fish and Wildlife Service. 1991. *Utah prairie dog recovery plan*. U. S. Fish and Wildlife Service, Denver, Colorado, USA.