

Project Report

on research entitled

Colorado Residents' Attitudes and Perceptions Toward Reintroduction of the Gray Wolf (*Canis lupus*) into Colorado

conducted by

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for

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Executive Summary

The purpose of this study was to determine the public's attitudes toward reintroduction of the gray wolf (*Canis lupus*) in Colorado. Study findings will assist the U.S. Fish and Wildlife Service in deciding whether or not Colorado should be included in the Northern Rocky Mountain Wolf Recovery Plan.

Data were collected by telephone and by mail-back questionnaires. The telephone survey elicited subjects' agreement to complete the longer mail survey and also to obtain information critical for analysis of non-response bias. The mail survey was the primary data collection instrument. A sample of 2507 people, stratified by the east slope and west slope of Colorado, was sent a mail survey to which 1452 responded (57.9%). In subsequent analysis, data were weighted to adjust for differential response rate from the east slope versus the west slope of Colorado, population size differences in the east slope versus the west slope of Colorado, and non-response bias (i.e., respondents were more likely to support reintroduction than were non-respondents).

Results show the public generally supports the idea of wolf reintroduction; 70.8% ($\pm 4.1\%$, 95% confidence interval) indicated they would vote for reintroducing wolves. More east slope residents (73.8%) than west slope residents (65.1% yes votes) supported wolf reintroduction, however, the majority of people in both regions supported the idea. Wolf reintroduction was viewed by most people to be as important as protecting other threatened or endangered species in the state (peregrine falcons, greenback cutthroat trout, river otters) but not more important than protecting bald eagles. Wolf reintroduction was not rated more important than most of the other major wildlife management activities conducted by the state (e.g., providing fishing and wildlife viewing opportunities, wildlife education in the schools, protecting and improving wildlife habitat).

The study examined a number of factors which were proposed to influence how people would vote on wolf reintroduction. Respondents supporting reintroduction were more likely to believe that reintroduction would result in preservation of the wolf, balanced deer and elk populations, increased understanding of the importance of wilderness, greater control of rodent populations, and a return of the natural environment to the way it once was. Those who would vote against reintroduction were more likely to believe it would result in ranchers losing money, wolf attacks on humans, large number of attacks on livestock, wolves wandering into residential areas, and large losses to deer and elk populations. Those who would vote yes and those who would vote no both thought it was likely that ranchers would shoot wolves if they were introduced.

Emotional factors were also highly associated with voting intentions. Those with positive emotional responses (happy, interested, agreeable) were more likely to support reintroduction than those with negative emotional responses (disgusted, angry, sad, fearful,

surprised). Another factor associated with voting was attitudes toward wolves. People who supported wolf reintroduction were more likely to have positive attitudes toward wolves. Commonly identified positive stereotypes about wolves were “beautiful”, “intelligent”, and “wild”, while common negative stereotypes were “pack oriented”, “predators”, and “dangerous”.

Compared to opponents, those who support reintroduction place higher importance on the bequest and existence values of wolves, report more direct experience with wolves, have received more information about wolves (e.g., through reading or watching television) and consider wolf reintroduction more personally important. In addition they are younger and more likely to live in urban environments.

A 12 item true-false test was administered to determine people’s “objective knowledge” about wolves. On the average, people gave the correct response on 6 of the items. Overall, subjects showed good awareness on generalities about wolves (e.g., there used to be wolves in Colorado, wolf attacks on humans are uncommon) but lower awareness on specifics about wolf species (e.g., only one pair of wolves in a wolf pack breeds in one year). However, most people incorrectly believe that wolves are in danger of becoming extinct. Those with higher objective knowledge scores were more likely to be positive toward wolves and wolf reintroduction.

Another major goal of this study was to determine the effect of “balanced information” on attitudes and voting intentions. Balanced information was defined as information which presents arguments supporting multiple positions on an issue. In this study, the views of four groups were presented: SINAPU (for wolf reintroduction), Colorado Cattlemen’s Association (against wolf reintroduction), Colorado Division of Wildlife (against wolf reintroduction), and a conglomeration of federal land management agencies (neutral). One half of the sample received balanced information and the other one-half did not. Balanced information showed no effect in tests between groups (information group versus no information group) or within the information group (comparison of the pre-information, telephone survey vote to the post information, mail survey vote). Possible explanations are that the balanced information was too complex or too detailed and therefore, not read or comprehended. Another explanation is that the arguments presented in the multiple views canceled out their respective effects.

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Colorado Residents' Attitudes and Perceptions Toward Reintroduction of the Gray Wolf (*Canis lupus*) into Colorado

INTRODUCTION

Due to increased human settlement, intensive land development, and conflict with domestic livestock during the late 19th and early 20th centuries, a federal program designed to eradicate the wolf from the western United States was undertaken. This program included extensive poisoning, trapping, and hunting of wolves. As a result of this program, a viable wolf population had disappeared from the western United States by the 1920s (U.S. Fish and Wildlife Service, 1987).

Since 1978, the gray wolf (*Canis lupus*) has been listed under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) as endangered throughout the lower 48 states (with the exception of the state of Minnesota, where it is classified as threatened). The Endangered Species Act mandates the development and implementation of plans for (1) the conservation and survival of all endangered species, and (2) protection of the ecosystems upon which the species depend. Pursuant to this mandate, the Northern Rocky Mountain Wolf Recovery Plan was completed by the U.S. Fish and Wildlife Service in 1987. This plan identifies a recovery strategy for gray wolves in portions of their former range in the northern Rocky Mountains of the United States.

The specific recovery areas identified by the Northern Rocky Mountain Wolf Recovery Plan include (1) the northwestern Montana recovery area, (2) the central Idaho recovery area, and (3) the Greater Yellowstone recovery area. The primary objective of the plan is to replenish the population of the gray wolf in appropriate areas of the western United States, the results of which will be to remove the gray wolf from the endangered and threatened species list.

Wolf Recovery in Colorado

The U.S. Fish and Wildlife Service has been directed by Congress to examine the feasibility of including Colorado in the Northern Rocky Mountain Wolf Recovery plan. To determine the tenability of including Colorado in the Plan, two separate components were studied. In part one, the biological feasibility of wolf reintroduction into Colorado was determined. This examined whether or not Colorado had a suitable habitat and prey base to support wolves (Bennett, 1994).

Our study was the second component and was an assessment of the social climate for wolf reintroduction in Colorado. The purpose of such a human dimensions approach is to ensure that decisions regarding the reintroduction of the wolf into Colorado include a representative and objective analysis of the public's views about wolf reintroduction. Such an analysis is composed of several requirements (Manfredo and Lipscomb, 1992). First, it must be guided by sound, theoretical concepts. Typically, the human dimensions study attempts to understand various social factors, such as people's attitudes, values, motivations, satisfactions, norms, and behaviors regarding a natural resource or wildlife issue. Second, the human dimensions study must be implemented according to accepted social science methods. These methods are determined based on the specific issue or problem at hand. Methods such as mail or telephone surveys, face-to-face interviews, observation, and ethnographic techniques are all potentially appropriate depending on the specific topic of investigation. Finally, the study should be designed to be part of the larger decision structure. As such, it would be integrated with biological data regarding a natural resource or wildlife issue before a final decision is made.

This study utilized accepted social science methods with the goal of obtaining human dimensions information regarding the public's values and attitudes toward the reintroduction of the gray wolf into Colorado. This information will be incorporated with the results of the biological feasibility study to contribute to the decision of whether to include Colorado into the revision of the Northern Rocky Mountain Wolf Recovery Plan.

Previous Research on Wolves and Wolf Reintroduction

There has been a significant amount of research regarding the social aspect of the wolf reintroduction issue, most of which has been done in Minnesota, Michigan, and around Yellowstone National Park (e.g., Kellert, 1985; Bath, 1989; Bath and Buchanan, 1989; Llewellyn, 1978). Past research, however, has primarily been descriptive, and has only briefly addressed the issue of wolf reintroduction in Colorado in the form of a single question on the April 1993 Colorado Environmental Poll, conducted by the Human Dimensions in Natural Resources Unit at Colorado State University (Manfredo, Vaske, Haas, and Fulton, 1993). The research that has been done regarding wolves and wolf reintroduction has focused on public attitudes toward wolves and wolf reintroduction.

Attitudes Toward Wolves and Wolf Reintroduction

In research that has examined overall attitudes toward wolf reintroduction, the public has been split over supporting or opposing wolf reintroduction. Bath (1991) found that about one-half of the Idaho and Montana residents support wolf reintroduction. This

is similar to findings in Colorado, where Manfredo et al. (1993) found that 50 percent of the residents of Colorado would support reintroducing wolves into their state. However, it has been found that attitudes toward wolves and wolf reintroduction differ across factors such as sociodemographics and knowledge about wolves. Furthermore, attitudes toward wolves and wolf reintroduction are often supported by specific beliefs about the outcomes of wolf reintroduction.

The Effect of Sociodemographics on Attitudes Toward Wolves and Wolf Reintroduction

Many studies have found that attitudes toward wolves and wolf reintroduction are not uniform across different sociodemographic groups, identified based on location of residence, age, and level of education. For example, in examining the effect of place of residence on attitudes toward wolves, Kellert (1985) reported that respondents from the Rocky Mountain, Pacific Coast, and Alaska regions of the United States had more favorable attitudes toward the wolf than respondents from the Northeast, North Central, and Southern regions. Positive attitudes toward wolves have also been found to be more prevalent among urban compared to rural residents (Llewellyn, 1978) and persons who live far away from wolves or proposed wolf reintroduction sites than those who live close by (Hook and Robinson 1982; Bath, 1989). Other sociodemographic factors that have been found to influence attitudes toward wolves are age and level of education. Kellert (1985) found that the proportion of respondents who reported disliking the wolf increased with age and decreased with increasing levels of education among adults.

The Effect of Knowledge on Attitudes Toward Wolves and Wolf Reintroduction

Objective knowledge about wolves has been found to influence attitudes toward the animal. Objective knowledge refers to knowledge about empirically supported facts regarding the nature and behavior of wolves. Several studies have found that persons who were knowledgeable about the wolf reported liking the wolf more and were more likely to support wolf reintroduction than individuals with little knowledge (Hook and Robinson, 1982; Kellert, 1985; Bath, 1989; Bath and Buchanan, 1989).

Beliefs About Wolves and Wolf Reintroduction

In addition to examining attitudes toward wolves and wolf reintroduction, research has examined specific beliefs about wolves and wolf reintroduction that underlie the more general attitudes. In a national study conducted during 1978, Kellert collected information concerning American attitudes and behaviors toward wildlife, including predators such as the wolf. Among the 33 animals that were rated by the public, the wolf was one of the least liked (Kellert, 1985). This research suggested that dislike for the wolf was "related to fears regarding their dangerousness, responsibility for causing

human property damage, predatory and carnivorous nature, wilderness association, and cultural and historical antipathies." In contrast, more positive attitudes toward the wolf may be associated with their "large size, advanced intelligence, phylogenetic relatedness to human beings, and complex social organization" (Kellert, 1985:174). McNaught (1987) found that a majority of the visitors to Yellowstone National Park felt that wolves still have a place in the park. Further analysis revealed that people who supported wolf reintroduction believed that wolves (1) would enhance the Yellowstone experience, (2) should be restored even if they posed a threat to humans and livestock, and (3) could provide an ecological balance in the park. In Montana, Tucker and Pletscher (1989) found that individuals who did not support wolf reintroduction believed wolves were a threat to humans or livestock. These same individuals were unwilling to subordinate human uses, such as recreation and commercial activities, to restoring wolf populations.

Summary of Past Research on Wolves and Wolf Reintroduction

Research on attitudes toward wolves and wolf reintroduction has found that several factors may serve as predictors of support for/opposition to reintroducing wolves into an area. For example, it has been found that people who (1) live away from wolves or wolf reintroduction sites, (2) are younger, (3) have higher levels of education as adults, or (4) live in urban areas are more likely to like wolves and support wolf reintroduction. In addition, the public holds various beliefs about wolves and wolf reintroduction that may explain their attitudes toward the animal and restoring it in various parts of the country.

Management Applications of the Study

The purpose of this study was to provide the U.S. Fish and Wildlife Service with information designed to assist in their decision as to whether Colorado should or should not be included in the Northern Rocky Mountain Wolf Recovery Plan. In addition, it provided the Colorado Division of Wildlife with information about Colorado residents' attitudes toward wolf reintroduction. There are several areas in which this study can be applied to the decision regarding reintroducing wolves into Colorado. First, this study provided information about the extent to which residents of Colorado support or oppose reintroducing the gray wolf. In addition, this support and opposition was examined by region of Colorado; specifically, east slope versus west slope.

Second, this study examined factors that may explain why residents support or oppose wolf reintroduction. For example, what do residents of Colorado believe are the most important outcomes of reintroducing wolves into Colorado? Are there stereotypes and/or beliefs about wolves that people have that drive their support for/opposition to

wolf reintroduction? How knowledgeable are residents of Colorado about wolves and wolf reintroduction? Is the support for/opposition to wolf reintroduction an emotional issue in addition to a function of beliefs and knowledge?

Third, as the importance of the wolf reintroduction issue to the general public grows, people will be exposed to conflicting information about the value of reintroducing wolves into Colorado. This study attempted to examine the extent to which an informed public would support or oppose wolf reintroduction by providing part of the sample with information about wolf reintroduction.

Fourth, this study examined why information about an issue affects people the way it does. Does information about wolf reintroduction affect people for whom the issue is important differently than those for whom it is less important? Are people who are more knowledgeable about wolves and wolf reintroduction affected by information differently than those that have little knowledge? Are various groups with a stake in the wolf reintroduction issue viewed by the public as credible sources of information about wolf reintroduction?

Finally, reintroducing the gray wolf into Colorado may potentially require the diversion of funds from other state wildlife management activities currently in place or being considered by the Colorado Division of Wildlife. Information from this study provided the Colorado Division of Wildlife with information about the public perception of the importance of reintroducing wolves into Colorado compared to other threatened/endangered species in Colorado and wildlife management activities that are currently in place in Colorado.

Study Goals and Objectives

To examine the human dimensions of wolf reintroduction, this study was divided into two major sections: (1) a nonexperimental section, or field study; and (2) an experimental section, or field experiment. In the nonexperimental segment, goals examined behavioral intentions, attitudes, and beliefs regarding wolves and wolf reintroduction with the intent of generalizing the results from the sample to the population of Colorado residents. This portion of the study focused on two separate regions of Colorado: the east slope, including the front range and eastern plains of Colorado; and the west slope, including the portion of the state that lies west of the front range region. Goals and objectives for this section are outlined below.

Goal 1: To learn the extent to which residents of Colorado support or oppose reintroducing the gray wolf into the state.

The objectives used to achieve this goal were:

1. To determine the proportion of Colorado residents that would support/oppose reintroduction of the gray wolf into the state, and;
2. To determine the public's attitude toward wolf reintroduction in Colorado and the extent to which this attitude predicts support of or opposition to wolf reintroduction in Colorado.

Goal 2: To identify factors that may influence the extent to which residents of Colorado support or oppose reintroducing the gray wolf into the state.

The objectives used to achieve this goal were:

1. To determine what the public believes are the most important outcomes of wolf reintroduction;
2. To determine the public's emotional responses toward wolves and wolf reintroduction;
3. To determine what individuals perceive would be their physical proximity to wolves if the animals were reintroduced into Colorado;
4. To determine the public's attitude toward wolves in general;
5. To determine the extent to which individuals have engaged in past behavior regarding wolves and wolf reintroduction;
6. To determine the level of knowledge the public possesses about wolves;
7. To determine the extent to which the public's view of wolves is consistent with their symbolic beliefs about wolf existence, and;
8. To determine the stereotypes the public holds about wolves.

In the field experiment portion of the study, the effects of information on attitudes were examined. On an applied level, the growth of public interest and involvement in how natural resources and wildlife are managed has resulted in a need to ensure that the public is well informed about resource issues. On a theoretical level, it has been found that providing information about an issue can: (1) improve the quality of attitudinal

information, and (2) influence the attitudes and behavior of the public.

Information about wolf reintroduction was supplied by four groups with an interest in the wolf reintroduction issue. One group provided a pro-wolf reintroduction message, two groups provided an anti-wolf reintroduction message, while the final group provided messages representing the views of federal land management agencies. The third goal and accompanying objectives were as follows:

Goal 3: To learn the effect of providing balanced information about wolf reintroduction on (1) beliefs and evaluations of outcomes to wolf reintroduction, (2) emotional responses toward wolf reintroduction, (3) attitudes toward wolf reintroduction, and (4) support for/opposition to wolf reintroduction. Balanced information was defined as information which presents arguments supporting multiple positions on an issue. In this study, the views of SINAPU (for wolf reintroduction), Colorado Cattlemen's Association (against wolf reintroduction), Colorado Division of Wildlife (against wolf reintroduction), and federal land management agencies (neutral) were presented.

In addition, this goal examined the mediating effects of personal importance of the wolf reintroduction issue, source credibility, and knowledge about wolves on the effects of balanced information. The objectives used to achieve this goal were:

1. To identify differences in beliefs and evaluations of outcomes to wolf reintroduction as a result of receiving balanced information about the issue;
2. To identify differences in emotional responses toward wolf reintroduction as a result of receiving balanced information about the issue;
3. To identify differences in attitudes toward wolf reintroduction as a result of receiving balanced information about the issue;
4. To identify differences in support for/opposition to wolf reintroduction as a result of receiving balanced information about the issue; and
5. To determine the mediating effects of source credibility, personal importance of the issue, and knowledge about wolves on the effects of receiving balanced information on beliefs and evaluations of outcomes to, emotional responses to, attitudes toward, and support for/opposition to reintroducing the gray wolf in Colorado.

Goal 4: To learn the public's willingness to divert funds from current wildlife management activities to reintroduce the gray wolf into Colorado.

1. To compare public's perception of the importance of specific Colorado Division of Wildlife management activities currently in place with the reintroduction of gray wolves into Colorado.

THEORETICAL CONCEPTUALIZATION

The primary goal of this study was to learn the extent to which residents of Colorado would support or oppose the reintroduction of the gray wolf into the state. To do so, this study examined attitudes toward and behavioral intention regarding wolf reintroduction. This study also examined the influence of various social psychological factors and information on attitudes toward and support for/opposition to wolf reintroduction in Colorado. Discussion of the theoretical conceptualization of this study includes three sections: (1) the relationship between attitudes and behaviors, (2) antecedents to attitudes, and (3) the effect of balanced information on attitudes and behaviors.

The Relationship Between Attitudes and Behaviors

The last three decades have seen a significant amount of systematic research that has addressed the correspondence between expressed attitudes and subsequent behavior. While there is consensus that a relationship exists, it has been found that sometimes this relationship is weak. One area which has received a significant amount of attention regarding attitude-behavior correspondence is the conceptualization of the attitude construct. Two ways that attitude may be conceptualized are as an “attitude toward a behavior” and as an “attitude toward an object”.

Attitude Toward a Behavior

One of the most influential lines of research in the area of attitude-behavior correspondence has centered around the theory of reasoned action (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975). According to this theory, most socially relevant human behaviors are under the volitional control of the individual, and as a result, the most direct predictor of a behavior is the intention to engage in that behavior. Therefore, once a behavior of interest is identified, analysis of the determinants of the intention to perform the behavior is identical to an analysis of the determinants of the behavior itself (Fishbein and Manfredo, 1992). In this study, behavioral intention is viewed as the intention to support or oppose wolf reintroduction into Colorado.

The theory of reasoned action proposes two determinants of behavioral intention. First, attitude toward a behavior, which is an evaluation of the behavior, is posited to influence the intention to perform it. The second determinant of behavioral intention is the subjective norm surrounding a behavior. This factor is the influence of opinions of significant referents on the individual's intention to perform a behavior. The relationship of attitude and subjective norms to behavior and behavioral intention is given by the

following formula:

$$B \sim I = f[w_1 \text{Att}_{\text{act}} + w_2 \text{SN}]$$

where B is the behavior of interest; I is the intention to perform that behavior; Att_{act} is the attitude toward performing the behavior; SN is the subjective norm concerning the behavior; and w_1 and w_2 are the weights of relative importance of the attitudinal and normative components, respectively. In this study, attitude toward a behavior is conceptualized as "attitude toward wolf reintroduction into Colorado."

Attitude Toward an Object

The second conceptualization of attitude is the attitude toward the object that the behavior is directed toward. While the theory of reasoned action recognizes an attitude toward a behavior as antecedent to that behavior, there is support for the position that an attitude toward an object will also influence behavior regarding that object.

Fazio (1986) explored the causal relation between attitudes toward an object and behavior. Fazio's model posited that the attitude-to-behavior sequence is initiated when the attitude toward the object is accessed from memory (or activated) by the presence of cues related to the attitude-object. This activation process is assumed to be automatic and occurs to the extent that there is a strong association between the attitude-object and the evaluation of that object. Given activation of a positive attitude, favorable qualities are attributed to the attitude-object. Conversely, given activation of a negative attitude, unfavorable qualities are attributed to the attitude-object. These perceptions of the attitude-object "comprise at least part of the individual's definition of an event" (Fazio, 1986:213) and will guide behavior related to such an event. For this study, attitude toward the attitude-object is operationalized as "attitude toward wolves" and is posited to have a direct influence on attitude toward supporting or opposing wolf reintroduction into Colorado.

Antecedents to Attitudes

In addition to research on the direct link between attitudes and behavior, there has been a significant amount of research that has examined the role of various factors that may influence attitudes toward a behavior or an attitude-object. Researchers in social psychology have identified three primary factors that serve as antecedents to attitudes (Eagly and Chaiken, 1993). One factor is the cognitive component, which contains thoughts that people have about the attitude-object or behavior. Second is the affective

component, which consists of feelings or emotions that people have in relation to the attitude-object or behavior. The third factor is the behavioral component, which encompasses peoples' past actions with respect to the attitude-object or behavior. This section will discuss the presence of these three components for the attitude toward a behavior (reintroducing the wolf) and the attitude toward the attitude-object (wolves).

The Cognitive Component of Attitudes Toward a Behavior and an Object

The Cognitive Component of Attitudes Toward a Behavior

For this study, the cognitive component of attitudes toward a behavior was made up of four factors: (1) beliefs about and evaluations of outcomes of the behavior, (2) attitude toward an object, (3) perceived proximity, and (4) prior knowledge.

Beliefs About and Evaluations of Outcomes of the Behavior. The most influential research regarding this aspect of attitude toward a behavior comes from Fishbein and Ajzen's (1975) theory of reasoned action. According to these researchers, attitudes toward a behavior are based on beliefs regarding the likelihood of specific salient outcomes of a behavior and an evaluation of those outcomes. This relationship between beliefs and attitudes has been described in the formula:

$$\sum_{i=1}^n b_i e_i = Att_{act}$$

where b_i is a salient belief regarding outcome i of a behavior, e_i is an evaluation of that outcome, n equals the number of salient beliefs about the behavior, and Att_{act} is the attitude toward the behavior. In this study, this cognitive component is operationalized as "beliefs about and evaluations of outcomes of wolf reintroduction."

Attitude Toward an Object. Both aforementioned lines of research that examined attitudes toward a behavior (Fishbein and Ajzen, 1975) and attitude toward an object (Fazio, 1986) view these types of attitudes as direct antecedents to behavior or behavioral intention. However, in this study, the relationship between these two attitude constructs and behavior will be consistent with Eagly's and Chaiken's (1993) composite attitude-behavior model. In this model, attitude toward the behavior is seen as having a direct influence on the behavioral intention. However, the influence of attitude toward an object is posited to influence behavioral intention indirectly by directly affecting attitude toward the behavior. In this study, it is proposed that "attitude toward wolves" is a cognitive component of the attitude toward wolf reintroduction.

Perceived Proximity. A third cognitive factor of attitude toward a behavior, or support of/opposition to wolf reintroduction, is the perceived proximity to wolf reintroduction. This factor has been examined in studies of wolf reintroduction in other parts of the United States. For example, Hook and Robinson (1982) found that the greater the distance the individual perceives him or herself to be from the location of wolf reintroduction, the more positive were the attitudes toward reintroducing the wolf.

Prior Knowledge. The fourth cognitive factor of attitudes toward support of/opposition to wolf reintroduction is the prior knowledge about wolves. This factor represents the extent to which individuals believe that certain factually based statements about wolves are true or false. Knowledge about wolves, being based on empirically supported information, is conceptually different than beliefs about outcomes of wolf reintroduction, which represents opinion items. Studies about wolf reintroduction have examined differences in attitude toward wolf reintroduction based on the knowledge people have about wolves. For example, Hook and Robinson (1982) found that increased knowledge about wolves was directly correlated with positive attitudes toward wolves and their recovery in Michigan. At a more general level, Kellert (1985) found that as knowledge about the wolf increased, so did positive attitudes toward the animal. Finally, Bath (1989) found that groups that had greater knowledge of the wolf also were more likely to favor its reintroduction into Yellowstone National Park.

The Cognitive Component of Attitudes Toward an Object

A significant portion of the research that has examined the cognitive components of an attitude toward an object have been conducted in terms of the evaluations that one social group makes regarding another group. Esses, Haddock, and Zanna (1993a) identified these cognitive components as (1) stereotypes toward and (2) symbolic beliefs regarding a social group.

Stereotypes. Stereotypes are "...oversimplified beliefs about the characteristics of a group, with no allowance for individual differences." (Papalia and Olds, 1985:611). Historically, stereotypes have been found to be highly related to attitudes toward a social group, either because stereotypes are used to rationalize unfavorable intergroup attitudes (Zawadzki, 1948) or because they contribute to overall evaluations of groups (Katz and Stotland, 1959). This study will apply research on prejudice and stereotypes to attitudes toward wolves by positing that stereotypes people hold about wolves will influence their general evaluation of the animal.

Symbolic Beliefs. When thinking about various groups, thoughts may come to mind other than those that relate to perceived characteristics, or stereotypes, of the group. One type of thought relates to the perception about how a group fits into society and makes it a better or worse place to live (Zanna, Haddock, and Esses, 1990). As such, symbolic

beliefs represent the extent to which an out-group's behavior is consistent with an individual's centrally held beliefs and norms (Esses, Haddock, and Zanna, 1993b). The concept of symbolic beliefs may be applied to a wildlife species such as the wolf. In this study, symbolic beliefs about the wolf represent the extent to which perceptions of the existence value of the wolf are consistent with perceptions of the existence value of wildlife in general.

Prior Knowledge. In addition to stereotypes and symbolic beliefs, prior knowledge is also a cognitive component of attitudes toward an object. Research on public attitudes toward wolves has found that this factor, in addition to influencing attitudes toward wolf reintroduction (described above) also influences attitudes toward wolves (Kellert, 1985).

The Affective Component of Attitudes Toward a Behavior

Affect regarding an attitude toward a behavior consists of feelings, moods, emotions, and sympathetic nervous system activity that people experience in relation to the object or behavior (Eagly and Chaiken, 1993) and is considered distinct from the cognitive component of an attitude (Zanna and Rempel, 1988). In this study, affect is operationalized as "emotional responses to wolf reintroduction."

The Behavioral Component of Attitudes Toward an Object and a Behavior

The behavioral component of attitudes consists of overt actions that people have exhibited in the past in relation to an attitude-object. The idea that evaluations are based on a behavioral component was a key tenet of research by Bem (e.g., 1972), who posited that people infer attitudes that are consistent with their prior behavior. In addition, according to stimulus-response behavior theory, when behaviors elicited by an attitude-object are rewarded or punished, relevant evaluative responses occur (Hovland, Janis, and Kelley, 1953). In this study, past behavior/experience related to wolves and wolf reintroduction is a measure of the extent to which respondents have engaged in past behavior, such as (1) reading about wolves or wolf-reintroduction, (2) watching a television show about wolves or wolf reintroduction (3) discussing wolves or wolf reintroduction with other people, and/or (4) seeing or hearing wolves in the wild.

The Effect of Balanced Information on Attitudes and Behaviors

The third goal of this study was to examine the influence that providing balanced information about wolf reintroduction has on beliefs about, emotional responses toward,

attitudes toward, and support of or opposition to wolf reintroduction. Balanced information was defined as information which presents arguments supporting multiple positions on an issue. Understanding the effects of balanced information on public attitudes, beliefs, and behaviors can benefit natural resource managers in two ways. First, balanced information about a management issue can serve to improve the quality of attitudinal information obtained from research instruments. Second, balanced information can lead to informed public involvement by increasing public awareness and knowledge about specific natural resource issues. Research specific to natural resource management has supported the need to understand the effects of providing balanced information to the public. Bright and Manfredo (in review) found that providing balanced information about natural resource management issues improved the quality of attitudinal information, measured as its ability to predict subsequent support for specific management strategies. Barro, Manfredo, Brown, and Peterson (in review) found that the ability to predict support for a natural resource-focused sales tax initiative increased with the specificity of information about the issue. The effect of balanced information on the relationship between attitudes and behavior has been supported in the social psychological literature (Davidson, Yantis, Norwood, and Montano, 1985).

Social psychological research has also found that increased information about an issue influences attitudinal information in other ways. It may change the strength with which attitudes are held (Linville, 1982; Tesser and Leone, 1977), the behavior regarding the attitude-object (Petty and Cacioppo, 1986), and the beliefs held regarding the behavior (Bright, Manfredo, Fishbein, and Bath, 1993; Fishbein and Manfredo, 1992). However, research has often found the relationship between balanced information and attitudes, beliefs, and behaviors to be nonlinear. Factors such as knowledge, personal importance of the issue, and source credibility have been found to mediate the influence of balanced information on attitudes and subsequent behavior.

The Mediating Effects of Knowledge on the Influence of Information

The effect that balanced information has on attitudes and subsequent behavior may be influenced by the amount of prior knowledge that an individual has about an issue. One line of research in this area identified a decelerating set-size effect (Davidson and Morrison, 1982). This effect posits that attitudes become more extreme as the number of pieces of information about the object increases (set-size effect). However, with each additional piece of information, the evaluative judgment increases at a decreasing rate (decelerating effect). The primary implication of these effects is that a message will provide less new information to individuals with high levels of existing knowledge than those with low levels of knowledge, thus decreasing that message's influence on attitudes and behavior.

The Mediating Effects of Personal Importance of the Issue on the Influence of Information

Two apparently contradictory lines of research have examined the effects of information on attitudes. Tesser and Leone (1977) found that as knowledge about an issue increases, attitudes regarding that issue become more extreme. This is posited to occur because as one becomes more familiar with an attitude-object, beliefs about that object become more positively correlated, resulting in more extreme attitudes. Linville (1982), on the other hand, found that greater familiarity with an attitude-object resulted in more moderate attitudes. This was posited to occur because increased information resulted in more complex knowledge structures about the attitude-object. The nature of a complex knowledge structure is that it contains uncorrelated beliefs, lessening attitude extremity.

Millar and Tesser (1986), however, reconciled the diverse findings of these two lines of research by identifying a mediating factor: commitment to the attitude-object. These researchers found that the more important the attitude-object is to an individual, the more highly correlated are beliefs about that attitude-object and therefore, the more extreme the attitude. On the other hand, when the attitude-object is unimportant, the beliefs about the object remain less correlated, moderating the attitude. Bright (1993) supported this effect of personal importance in a study of information and its effects on attitudes toward natural resource management issues.

The Mediating Effects of Source Credibility on the Influence of Information

In the elaboration likelihood model, Petty and Cacioppo (1986) indicated that several different factors can influence the extent to which someone will be motivated or able to elaborate on a message. One of these factors is the perceived credibility of the source of information. There are two aspects of source credibility. One is expertise. Findings have supported the notion that a communicator who is perceived as an expert is more persuasive than one who is perceived to lack expertise. The second component of source credibility is trustworthiness. It has been found that sources of information that are perceived to be unbiased are more persuasive than sources that appear to be biased (Petty and Cacioppo, 1986). In addition to identifying the components of source credibility, Petty and Cacioppo noted that this variable can serve different roles in different situations that involve the potential elaboration of a message. First, source credibility can serve as a simple peripheral cue; that is, influence behavior when there is no motivation and/or ability to process a message. Second, this factor may serve as a message argument when elaboration of the message is high, increasing or decreasing the credibility of the message itself. Finally, source credibility may increase or decrease message-relevant thinking when the likelihood of message elaboration is moderate (Petty,

McMichael, and Brannon, 1992). In sum, source credibility may have an influence on the effect of information on attitudes when there is moderate to high elaboration of a message, or it may directly influence behavior when there is no elaboration of the message.

The Conceptual Model of the Wolf Reintroduction Study

Figure 1 is a model of the theoretical conceptualization of this study. A summary of this conceptualization is as follows:

1. The behavioral intention component of the study, support for/opposition to wolf reintroduction, is most directly influenced by an individual's general attitude toward wolf reintroduction.
2. The general attitude toward wolf reintroduction is influenced by factors that represent cognitive, affective, and behavioral components. The cognitive component includes attitude toward wolves, attitude toward wolf reintroduction (belief-evaluation), perceived proximity to wolf reintroduction, and objective knowledge about wolves. The affective component includes emotional responses to wolf reintroduction. The behavioral component includes experience with wolves.
3. Balanced information about wolf reintroduction influences attitudes toward wolf reintroduction (belief evaluation) and general attitude toward wolf reintroduction. The effects of balanced information are, in turn, mediated by objective knowledge about wolves, personal importance of the wolf reintroduction issue, and the public's perceived source credibility of the salient groups involved in the issue.
4. Attitude toward wolves is influenced by factors that represent cognitive and behavioral components. The cognitive components include symbolic existence beliefs about wolves (a factor related to basic belief orientations toward wildlife), stereotypes about wolves, prior sources of information about wolves, and objective knowledge about wolves. The behavioral component includes experience with wolves.
5. Support for/opposition to wolf reintroduction may, to some extent, be influenced by the source credibility of the salient groups involved in the issue.

METHODS

Prior to the data collection stage, the study plan and research instrument received peer review. Reviews were generally favorable, and as a result, only minor changes were made to the original study design.

Study Design

An experimental group-control group design (Kerlinger, 1986), with subjects stratified on place of residence, was utilized. The control group received a mail-back questionnaire that did not include balanced information about wolf reintroduction. Data collected from this group was used to generalize the results to the entire population of Colorado. The experimental group received balanced information about wolf reintroduction and then was asked to respond to questions related to beliefs about, attitudes toward, and support for/opposition to wolf reintroduction. Results from this group were compared to those of the control group in order to test the effects of balanced information about wolf reintroduction on beliefs about, emotional responses to, attitudes toward, and support for/opposition to wolf reintroduction.

Data Collection

There were two stages of data collection in this study. The first stage (December, 1993) utilized a telephone interview technique for the purposes of an elicitation study, while the second stage (summer, 1994) used both a telephone survey and a mail-back questionnaire.

Stage 1

The first stage of the study was an elicitation study. The purpose of this stage was to identify beliefs about outcomes of wolf reintroduction that are salient to the public. In this stage, a random sample of 95 individuals -- 51 from the east slope and 44 from the west slope of Colorado -- were contacted by telephone. After receiving a brief, nonbiased introduction to the wolf reintroduction issue, respondents were asked two open ended questions as follows:

1. What do you see as the advantages of reintroducing wolves into Colorado?

2. What do you see as the disadvantages of reintroducing wolves into Colorado?

The most often mentioned items were used to develop questions about beliefs of outcomes of reintroducing wolves into Colorado. These items, along with the number of times they were mentioned, are presented in Appendix A.

Stage 2

The second stage of the study entailed administration of a telephone survey (Appendix B) and a mail-back questionnaire (Appendix C). The telephone survey was used to obtain initial data regarding support for/opposition to wolf reintroduction into Colorado and to obtain the sample for the subsequent mail-back questionnaire. Mail-back questionnaires were sent to respondents immediately after they agreed, over the telephone, to participate in this stage of the study. Follow-up procedures included a letter, sent 10 days after the initial mailing, reminding subjects of their promise to return a completed questionnaire. If subjects did not return a questionnaire after 10 more days, a second questionnaire was mailed to them.

Sampling

The target population was residents of Colorado. A random sample of the target population, stratified by location of residence, was drawn. Stratification of the sample involved dividing the sample population into east slope and west slope. These two slopes were identified using Colorado counties identified as east or west slope (see Appendix D for the list of counties).

Ten thousand telephone numbers (5,000 each from the east and west slopes) were obtained from Survey Sampling, Inc. (SSI). To draw the sample for the mail survey in stage 2, potential respondents were contacted by telephone. The interviewer introduced himself or herself to the respondent and, after determining if the respondent was 18 years or older, introduced them to the nature of the study. Respondents were first asked, "Given the opportunity to vote for or against wolf reintroduction in Colorado, would you vote for or against it?" This provided items for a nonresponse analysis of the mail survey. Respondents were then asked if they would be willing to complete a questionnaire designed to obtain information about public attitudes toward and support for/opposition to wolf reintroduction in Colorado. The names and addresses of those who agreed to participate were obtained and respondents were immediately sent a mail-back questionnaire. Respondents were guaranteed confidentiality.

Measurement of the Questionnaire Items

Below is a description of how each factor was measured to attain the outlined goals and objectives of the study. The first goal was to learn the extent to which Colorado residents support or oppose reintroduction of the gray wolf into the state. Two factors were measured to accomplish this goal: (1) support for/opposition to wolf reintroduction, and (2) general attitude toward wolf reintroduction.

Support for/Opposition to Wolf Reintroduction

Support for/opposition to wolf reintroduction is viewed as a behavioral intention, and was measured using two scales. First, respondents were asked..."If you were given the opportunity to vote for or against reintroducing the gray wolf into Colorado, how would you vote?" After indicating their choice, respondents were then asked to again consider the choice they made. Using a 4-point scale ranging from not at all certain to extremely certain, respondents were asked how certain they were that they would vote that way.

General Attitude Toward Wolf Reintroduction

Attitude toward wolf reintroduction was measured using three items and a 7-point scale for each item. Subjects were asked if (1) they approved or disapproved of reintroducing the gray wolf into Colorado, (2) they believed reintroducing the gray wolf into Colorado would be good or bad, and (3) they liked or disliked the prospect of wolves being reintroduced into Colorado. Three separate items are used because "...in the absence of appropriate empirical evidence, single response measures should not be taken as indicants of attitude" (Fishbein and Ajzen, 1975:56), therefore, use of multiple items is designed to increase the validity of the attitude measure. To decrease the extent to which a response to one of these items influences responses to the remaining two, these items did not occur together on the questionnaire. These items were collapsed into a single attitude.

The second goal of the study called for identifying factors that may influence attitudes toward and support for/opposition to wolf reintroduction into Colorado. These factors included (1) attitudes toward wolf reintroduction (belief evaluation), (2) perceived physical proximity to wolf reintroduction, (3) attitude toward wolves, (4) prior sources of information about wolves, (5) experience with wolves, (6) emotional responses toward wolf reintroduction, (7) objective knowledge about wolves, (8) symbolic existence beliefs about wolves, and (9) stereotypes about wolves.

Attitudes Toward Wolf Reintroduction (Belief Evaluation)

Beliefs comprising this variable were obtained using the content analysis of the responses to the questions about advantages and disadvantages of wolf reintroduction into Colorado, asked in the elicitation study in stage 1. Subjects were asked the extent to which they agreed or disagreed with 12 specific statements about potential outcomes to wolf reintroduction. The scale was a 7-point semantic differential scale, ranging from strongly disagree to strongly agree. To measure the evaluation of the outcomes, respondents were asked, on a 7-point semantic differential scale, if each outcome would be extremely, moderately, slightly, or neither bad/good. Each belief score was multiplied by its corresponding evaluation to arrive at a single variable, referred to as a BE index (Ajzen and Fishbein, 1980).

Perceived Physical Proximity to Wolf Reintroduction

To measure perceived proximity to wolf reintroduction, respondents were asked to estimate how close they thought wolves would come to their home if wolves were reintroduced into Colorado, given a choice of responding (1) less than 10 miles, (2) between 11 and 25 miles, (3) between 26 and 50 miles, (4) between 51 and 100 miles, and (5) more than 100 miles.

Attitude Toward Wolves

Attitude toward wolves was measured using three items, derived from Osgood, Suci, and Tannenbaum's (1957) description of bipolar adjective scales. First, respondents were asked, using a 7-point semantic differential scale, if their general attitude toward wolves was extremely, moderately, slightly, or neither negative/positive. Second, using the same 7-point scale, respondents were asked if they strongly, moderately, slightly or neither disliked/liked wolves. Finally, respondents were asked if they thought wolves are extremely, moderately, slightly, or neither harmful/beneficial.

Prior Sources of Information about Wolves

Prior sources of information about wolves were measured using nine items. Subjects were asked if they had (1) read any nonfictional books about wolves, (2) read any fictional books about wolves, (3) read newspaper or magazine article(s) about wolves, (4) watched TV news report(s) about wolves, (5) watched a TV documentary about wolves, (6) discussed wolves with others, (7) read a pamphlet about wolves distributed by an environmental or conservation group, (8) listened to a presentation about wolves by an environmental or conservation group, or (9) worked with an environmental or conservation group in a project that involved wolves. For each item,

subjects responded on a 4-point scale of never, only once, a few times, or many times.

Experience with Wolves

Experience with wolves was measured using four items. Subjects were asked, using a yes/no format, if they had (1) seen a wolf in the wild, (2) heard the howl of a wolf in the wild, (3) seen the results of wolf presence (e.g., wolf tracks, wolf kills, or wolf scat), or (4) seen a wolf in captivity. Respondents were then asked to indicate, for each of the items they had experienced, whether it was a positive or negative experience for them. The scale used was a 7-point semantic differential scale ranging from extremely negative to extremely positive.

Emotional Responses Toward Wolf Reintroduction

Emotional responses toward wolf reintroduction were measured using eight items adapted from Plutchik's (1980) typology of emotional content. Subjects were asked how strongly they felt each of eight emotions, derived from the Plutchik (1980) typology, when they thought about the prospect of the gray wolf being reintroduced into Colorado. Subjects were asked to respond, for each emotion item, on a 7-point unipolar scale, with 0 representing "not at all" and 6 representing "extremely."

Objective Knowledge About Wolves

Respondents were presented with 12 questions designed to measure their knowledge about wolves and asked to respond to each question with "true", "false", or "not sure" (Kellert, 1985).

Symbolic Existence Beliefs About Wolves

The symbolic existence beliefs toward wolves were measured based on an individual's basic belief orientations toward wildlife (Fulton and Manfredi, 1993). These are a measure of an individual's overall position on specific wildlife management issues. For example, such issues or domains may include animal rights, use of wildlife, secondary recreation wildlife, bequest and existence, hunting, secondary residential wildlife, wildlife education, and fishing. Belief orientations for each domain are measured using several belief items. For example, an individual's animal rights orientation is measured by asking several questions related to their perception of the rights that animals should or should not have. In this study, an individual's basic belief orientation toward the bequest and existence value of wolves was measured. This involves adapting the bequest and existence items for wildlife to wolves. The

respondents were asked to indicate whether they strongly, moderately, slightly, or neither disagree/agree with five wolf bequest and existence belief orientation items.

Stereotypes About Wolves

Subjects were asked to provide stereotypes about wolves as follows. First, they were asked to list characteristics, using single adjectives or short phrases, that they would use to describe wolves. They were told to provide as many characteristics as necessary (up to six) to convey their impression of wolves. They were then asked to look at the characteristics that they had listed and assign a valence to each characteristic as they had used it to describe the wolf. The valence of this characteristic was rated on a 7-point scale ranging from extremely negative to extremely positive. This method of identifying stereotypes is designed to obtain characteristics of wolves that are specifically salient to each individual respondent and is consistent with methodology used to identify stereotypes of social groups (Esses, Haddock, and Zanna, 1993).

The third goal of this study examined the effect of providing balanced information about wolf reintroduction on beliefs and evaluations of outcomes of, emotional responses toward, attitudes toward, and support for/opposition to wolf reintroduction. The mediating effects of personal importance of the wolf reintroduction issue, knowledge about wolves, and source credibility on the effect of balanced information were examined. In addition to measuring knowledge (described above), attaining this goal included (1) providing balanced information about wolf reintroduction, (2) measuring personal importance of the wolf reintroduction issue, and (3) measuring source credibility.

Balanced Information about Wolf Reintroduction

Within the body of the questionnaire, balanced information was provided from four different organizations, discussing their views on reintroducing the gray wolf into Colorado. Respondents were randomly placed into either the "balanced information received" group (experimental group) or the "no balanced information received" group (control group). The "balanced information received group" received balanced information that described (1) the four organizations, and (2) the detailed positions of these four organizations regarding reintroducing wolves into Colorado. The "no balanced information received group" received the same description of the four organizations as the "balanced information received group", but did not receive detailed information about the positions of the four groups. Organizations that provided information were (1) SINAPU, a private pro-wolf reintroduction organization; (2) the Colorado Cattlemen's Association, a private organization that opposes wolf reintroduction; (3) the Colorado Division of Wildlife, the state wildlife management agency (opposed to wolf

reintroduction); and (4) a conglomeration of federal land management agencies (neutral towards wolf reintroduction), including the U.S. Fish and Wildlife Service, National Park Service, U.S. Forest Service, and U.S. Bureau of Land Management.

Personal Importance of the Wolf Reintroduction Issue

Personal importance of the wolf reintroduction issue was measured using three items to increase the validity of the personal importance measure. These items were combined into a single index, given high internal-consistency reliability. On 7-point scales, with 0 representing "not at all important" and 6 representing "extremely important", subjects were asked (1) How important is the issue of wolf reintroduction in Colorado to you personally? (Bright, 1993), (2) How important is it to you personally that you keep up to date with the issue of wolf reintroduction in Colorado? (Peterson and Dutton, 1975), and (3) How important is it to you personally that the final decision regarding whether wolves are reintroduced in Colorado is the same as what you think the decision should be? (Krosnick, 1988).

Source Credibility

Source credibility was measured using two items for each information source, designed to measure source expertise and source trustworthiness. After reading the description of the organizations and their detailed positions, respondents were asked the extent to which they agreed that each group (1) was well informed toward environmental, natural resource, or wildlife management issues (expertise), and (2) had a biased viewpoint toward environmental, natural resource, or wildlife management issues (trustworthiness). A 7-point semantic differential scale was used to ask respondents if they strongly, moderately, slightly, or neither disagree/agree with each statement.

In addition to the goals of the study already discussed, preference for protection of other species and various wildlife management activities relative to the wolf reintroduction issue were examined.

Comparison of Wolf Reintroduction to Protection of Other Species

Subjects were prompted with a brief statement regarding other threatened or endangered species in Colorado that the Colorado Division of Wildlife protects. Following the statement, a list of four current threatened or endangered species was provided. Subjects were asked to indicate, on a 7-point semantic differential scale, whether they believed protecting each species was extremely, moderately, slightly, or neither less/more important than reintroducing the gray wolf in Colorado.

Comparison of Wolf Reintroduction to Colorado Division of Wildlife Management Activities

Subjects were prompted with a brief statement that identified limited available funds for wildlife management activities and the possible need to sacrifice certain management activities for others. Following this statement, a list of seven current wildlife management activities was provided. Subjects were asked to indicate, on a 7-point semantic differential scale, whether they believed each program was extremely, moderately, slightly, less/more important, or of the same importance than reintroducing the gray wolf into Colorado.

Data Analysis

Data was analyzed using SPSS/PC+ 5.0 (Norusis, 1992). Goal 1 of the study

proposed to learn the extent to which residents of Colorado support or oppose reintroducing the gray wolf into Colorado. Inferential statistics were used to generalize the support for/opposition to wolf reintroduction and general attitudes toward wolf reintroduction from the sample to the general population of Colorado. Data from west slope residents were weighted based on the actual population of the west slope as compared to the east slope. In addition, data were weighted based on potential nonresponse bias due to failure of some telephone respondents to return a mail-back questionnaire. In addition to the generalization of results to the entire population of Colorado, inferential statistics were used to compare responses between east slope and west slope residents.

Study goal 2 proposed to identify social psychological factors that might influence Coloradoans' support for/opposition to reintroducing the gray wolf into the state. Inferential statistics were used to generalize to both Colorado as a whole using weighted data, and the east and west slopes of Colorado separately. T-tests were conducted to compare residents of the east and west slopes of Colorado on each of the social psychological factors. Finally, multiple regression was conducted to examine the effects of the factors on general attitudes toward wolf reintroduction and support for/opposition to wolf reintroduction.

Study goal 3 proposed to learn the effect of providing balanced information about wolf reintroduction on beliefs about, attitude toward, and support for/opposition to wolf reintroduction. Multivariate analysis of variance procedures were used to determine (1) the effect of balanced information on beliefs about, attitudes toward, and support for/opposition to wolf reintroduction, and (2) the mediating effects of knowledge, personal importance, and source credibility on the influence of balanced information.

Finally, inferential statistics were used to determine the public's perceptions of the importance of several wildlife management activities in comparison to reintroducing the gray wolf into the state. Results were generalized to both Colorado as a whole and the east and west slopes separately. Analysis of variance was conducted to determine if the importance of various wildlife management activities related to wolf reintroduction differed between east slope and west slope residents.

RESULTS

Response Rate

Two thousand five hundred and seven people who were contacted by telephone agreed to return the mail-back questionnaire: 1,141 from the west slope and 1,366 from the east slope. Of that total, 1,452 subjects actually returned the questionnaire (57.9% response rate). West slope residents responded at a higher rate (751, 65.8%) than east slope respondents (701, 51.3%). Among respondents, a total of 734 people received questionnaires with balanced informational messages about wolf reintroduction and 718 did not receive the balanced information. Those receiving balanced information were used only for 1) tests on effects of information, and 2) nonresponse bias.

Mail-back questionnaire response-nonresponse comparisons were made on the telephone survey question regarding how one would vote on wolf reintroduction (Table 1). Results indicated a bias of fairly large magnitude. Nonrespondents were much less likely to vote for reintroduction and were more likely to be unsure how they would vote. For example, 74.8 percent of the east slope respondents supported reintroduction compared to only 46 percent of the east slope nonrespondents.

In estimating parameters for all Colorado and for east slope versus west slope, mail-back questionnaire results were weighted to adjust for (1) differential response rate, (2) east slope versus west total population, and (3) nonresponse bias.

Indices

The first step in analysis was to determine the reliability of indices developed for this study (Table 2). Reliability was estimated using coefficient alpha, which is based on the internal consistency, i.e., average correlations among items. Coefficient alpha provides a good estimate of reliability because, in studies such as this, the major source of measurement error is the sampling of content represented by the items (Nunnally and Bernstein, 1994).

Results indicated that all ten indices had alphas greater than .720, indicating acceptable levels of internal consistency. In further analysis using these indices, index scores were computed as the average of item scores in the domain. Items with missing values were excluded from the computation of indices and a person received a missing value for the index only if they had missing values on all items in the domain.

Statewide Results

Wolf Reintroduction

Results from both the telephone survey and the follow-up mail-back questionnaire indicated that the majority of Coloradoans supported the idea of reintroducing gray wolves into the state (Figure 2). On the telephone survey, 59.5 % ($\pm 3.2\%$; 95% confidence interval) indicated they would vote for reintroduction, 19.0% would vote against reintroduction, and 21.5% indicated they did not know. In the follow-up mail-back questionnaire, 70.8% ($\pm 4.1\%$; 95% confidence interval) indicated they would vote for reintroduction while 29.2% indicated they would vote against it. Results on attitude statements coincide with statements about voting. Most respondents indicated they would slightly, moderately or strongly approve of reintroduction (68.8%), that they slightly, moderately or strongly like the prospect of reintroduction (68.8%) and that they perceive reintroduction to be slightly, moderately, or extremely good (62.9%) (Table 3). Mean scores on wolf reintroduction attitude indices were .95 (on a +3 to -3 scale) on the affect measure and 1.47 (on a +9 to -9 scale) on the belief-evaluation index, indicating overall positive attitudes toward wolf reintroduction (Table 4).

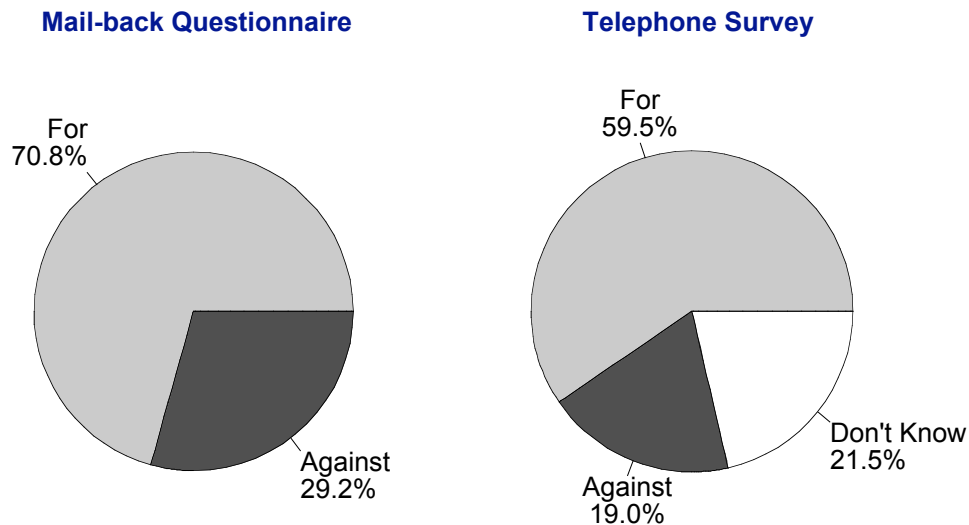


Figure 2. Mail and Telephone Responses to a Hypothetical Vote Regarding Gray Wolf Reintroduction, for all Coloradoans.

Positive and negative attitude groups differed on their emotional responses to the prospect of wolf reintroduction (Table 5). For those with negative attitudes, emotional responses associated with reintroduction were “fearful,” “angry,” “disgusted,” “surprised,” and “sad.” Responses for those with positive attitudes included “happy,” “interested,” and “agreeable.” Mean scores on the emotion indices (using a 0 to 6 scale) were 3.82 on the positive emotions measure and 1.01 on the negative emotions measure (Table 4).

Wolf reintroduction was found to be a moderately important issue to most Coloradoans. The mean importance score was 3.29 on a scale that ranged from 0 (not at all important) to 6 (extremely important) (Table 4). High percentages indicated it was important that they keep up to date with the wolf issue (46.8% above the scale midpoint), that the decision coincides with their preference (50%), and that reintroduction was personally important (54.7%) (Table 6).

Respondents were asked to indicate whether reintroduction of gray wolves was more important (slightly, moderately, or extremely), of the same importance, or less important (slightly, moderately, or extremely) than protection of species that are already threatened or endangered in Colorado (Figure 3, Table 7). The most frequent response was that wolf reintroduction was of the same importance as protecting greenback cutthroat trout (48.5%), river otters (56.6%) and peregrine falcons (55.3%). However, for 56.5% of the respondents, protection of bald eagles was slightly, moderately, or extremely more important than wolf reintroduction.

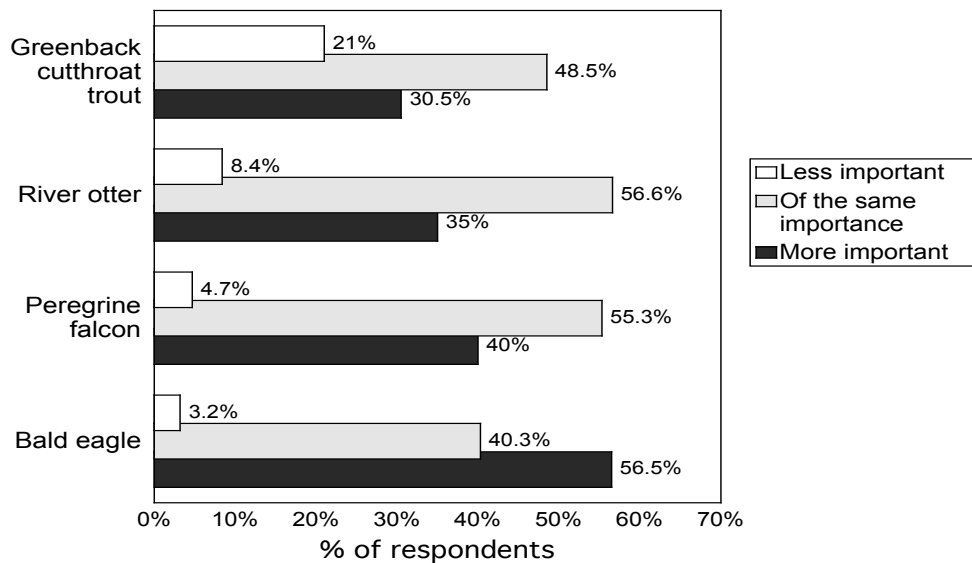


Figure 3. Importance of Protecting Other Endangered or Threatened Species Compared to Reintroduction of the Gray Wolf, for all Coloradoans.

Respondents were also asked how wolf reintroduction compared to other major activities conducted by the Colorado Division of Wildlife. Modal responses (most frequent) indicated current Colorado Division of Wildlife activities were more important than wolf reintroduction (Figure 4, Table 7). Results indicated that activities which focused on providing fishing opportunities (45.8% more important, 32.7% less important, 21.5% same importance), providing wildlife viewing opportunities (38.5% more, 27.4% less, 34.1% same), providing wildlife education in schools (57.6% more, 10.1% less, 32.3% same), protecting and improving habitat (60.7% more, 4.1% less, 35.2% same), preventing other species from becoming threatened (60.2% more, 1.8%, less 38.0% same), and protecting endangered or threatened species that already live in Colorado (60.7% more, 1.7% less, 37.6% same) were generally viewed as more important than reintroducing wolves. Only providing hunting opportunities was viewed to be less important than wolf reintroduction (35.9% more, 48.9% less, 15.2% same).

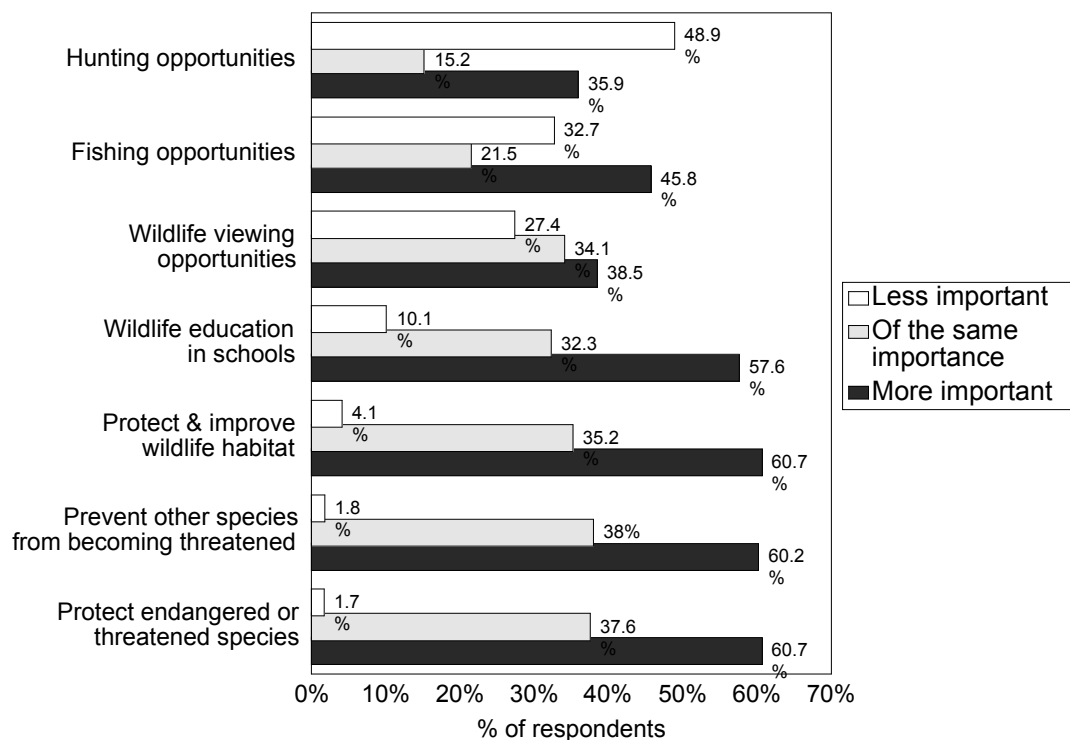


Figure 4. Importance of Other Colorado Division of Wildlife Activities Compared to Reintroducing the Gray Wolf, for all Coloradoans.

The basis for differences in attitudinal positions is explained, in part, by examining responses to belief statements. Table 8 shows differences between those with positive and negative attitudes on belief measures. Three scores are examined: (1) agreement that the item listed would be a consequence of wolf reintroduction; (2) whether the consequence would be good or bad; and (3) the product of 1 and 2, referred to as the belief-evaluation (BE) index.

The pattern of differences showed that those with negative attitudes believed reintroduction would result in a large number of attacks on livestock, ranchers losing money, wolves wandering into residential areas, and large losses in deer and elk populations. Means suggested these outcomes were judged to be likely and undesirable by those with negative attitudes. Beliefs most strongly associated with positive attitudes were that reintroduction would preserve the wolf as a wildlife species, keep deer and elk populations in balance, lead to greater control of rodent populations, return the natural environment to the way it once was, and help people understand the importance of wilderness. Means suggested that for the positive attitude group, these outcomes of wolf reintroduction were judged to be highly likely and positive. Those with positive attitudes

and those with negative attitudes had strong agreement that ranchers would shoot wolves; however, those with negative attitudes rated that outcome somewhat neutral while those with positive attitudes rated it strongly negative. Similarly, both groups rated wolf attacks on humans as bad, but those with positive attitudes rated such attacks as being more unlikely than did those with negative attitudes.

Attitudes Toward and Knowledge About Wolves

Given attitudes toward wolf reintroduction, it is not surprising that a majority of Coloradoans had highly positive attitudes toward wolves. The mean score on the attitude index was 1.4 on a scale where the possible range was +3 to -3. A large percentage of respondents indicated that they slightly, moderately, or strongly liked wolves (69.1%), rated them as slightly, moderately or extremely positive (64.2%), and rated them as slightly, moderately or extremely beneficial (68.2%) (Table 9).

All subjects (including those who received balanced information and those who did not) were asked to list the characteristics they associate with wolves (i.e., stereotypes) and whether they viewed each characteristic as positive, neutral, or negative (Table 10). Unweighted results among the 1,452 respondents (701 from the east slope, 751 from the west slope) showed that positive statements far outnumbered negative or neutral statements about wolves. The most frequently mentioned positive characteristics were “beautiful” (273 mentions), “intelligent” (262), “wild” (140), and “shy” (137). Negative characteristics frequently mentioned included “pack oriented” (105), “predators” (92), “dangerous” (78), and “killers” (50). It is interesting to note that several characteristics were mentioned frequently as both positive and negative characteristics. For example, “wild” was mentioned by 140 people as a positive characteristic and by 48 people as a negative characteristic.

Other results suggested that respondents agreed with the existence symbolism in having wolves in Colorado (Table 11). The mean score for existence beliefs was 4.66 on a scale ranging from 1 (strongly disagree) to 7 (strongly agree) (Table 4). Respondents agreed that it was important (slightly, moderately, extremely) for Colorado to have an abundant wolf population (50.7%), it was important to know wolves existed (66.3%) and were healthy (65.8%), and wolves were important for future generations (55.9% and 64.0%).

Given the scarcity of wolves in North America, an unexpectedly large percentage of respondents reported some type of direct experience with wolves (Table 12). Almost one in four reported they had seen a wolf in the wild (23.4%), while 37.1% said they had heard a wolf in the wild and 18.2% indicated they had seen the results of wolf presence. Most respondents who reported these experiences reported them as positive occurrences. An overwhelming majority of respondents (83.0%) indicated they had seen a wolf in

captivity; however, respondents were divided on whether that was a positive (36.4%) or negative (36.5%) event.

Frequent sources of information about wolves for most Coloradoans were TV news reports (53.4% said they watched a few times, 20.2% said they watched many times) and newspaper/magazine articles (52.3% few times, 20.7% many times) (Table 13). Other, somewhat frequent sources included fictional books (40.4% few times, 8.3% many times), TV documentaries about wolves (42.5% few times, 17.8% many times), and discussion with others (42.5% few times, 15.3% many times). Infrequent sources of information were nonfictional books, pamphlets and presentations from interest groups, and actual work experience with interest groups.

Subjects were asked to indicate their agreement with statements that described SINAPU, Colorado Cattlemen's Association, Colorado Division of Wildlife and federal land management agencies as well-informed and as biased toward environmental, natural resource, or wildlife management issues (Table 14). The group which most people agreed was slightly, moderately, or strongly well-informed was Colorado Division of Wildlife (82.6% agreed), followed by federal land management agencies (60.1%), SINAPU (59.0%), and the Colorado Cattlemen's Association (42.1%). Perception of bias was most frequent for the Colorado Cattlemen's Association (74.4%), followed by SINAPU (64.5%), federal agencies (50.3%), and the Colorado Division of Wildlife (46.6%).

Respondents were presented with 12 true-false questions to assess their objective knowledge about wolves (Figure 5). The mean number of correct responses was 5.83, while the median was 6.0 and the mode was 5.0. The average percentage of people getting an item correct was 49.1%.

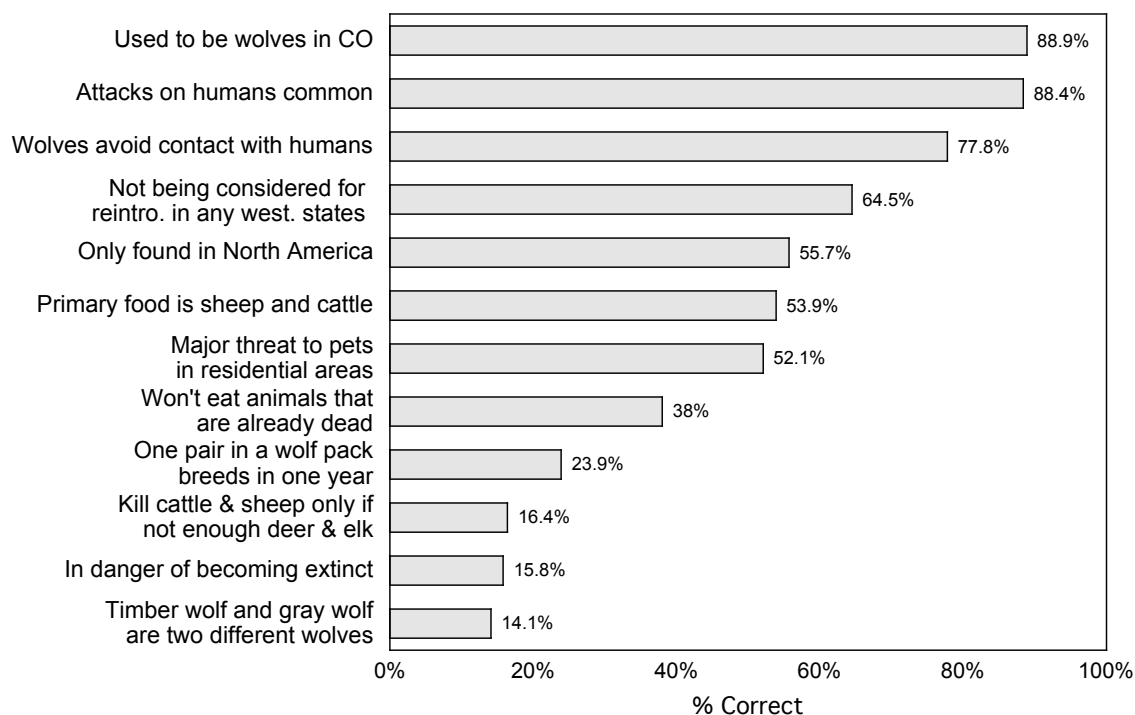


Figure 5. Percent Correct on Objective Knowledge Statements About Wolves, for all Coloradoans.

Items that most people answered correctly stated that wolves used to live in Colorado (true: 88.9% correct), wolf attacks are common (false: 88.4%), and wolves avoid contact with humans (true: 77.8%) (Figure 5, Table 15). Items answered correctly by one-third to two-thirds of respondents were that wolves: are not being introduced in any western states (false: 64.5%), are found only in North America (false: 55.7%), primary food is cattle and sheep (false: 53.9%) pose threats to pets (false: 52.1%), and will not eat animals that are already dead (false: 38.0%). Items that few people answered correctly stated that only one pair of wolves in a wolf pack breeds in a year (true: 23.9%), wolves kill cattle and sheep only if there are not enough deer and elk (false: 16.4%), wolves are in danger of becoming extinct (false: 15.8%), and gray wolves and timber wolves are names for two different kinds of wolves (false: 14.1%).

Objective knowledge about wolves was found to be positively associated with all of the variables assessing subjective reactions to wolves and wolf reintroduction. Those who had more correct answers on the test were also more likely to have positive attitudes toward reintroduction (Pearson's $r = .21$), positive attitudes toward wolves ($r = .28$), positive response toward the symbolism of wolf reintroduction ($r = .18$), and report

having received more experience ($r=.20$) and prior information about wolves ($r=.35$).

Socio-demographic Correlates of Attitudes and Knowledge

Several socio-demographic variables were tested for their association with attitudinal and knowledge variables (Table 16). Findings indicated that attitudes toward wolves and wolf reintroduction and symbolic existence beliefs about reintroduction were positively associated with size of community and perceived distance from wolf reintroduction sites and negatively associated with age. This suggests that those who are positive toward wolves, their existence in Colorado, and wolf reintroduction are more likely to be younger, from large communities, and perceive reintroduction will occur distant from areas they currently live. Other findings indicated age was negatively related to experience, prior information, and personal importance of wolf reintroduction, and education was positively related to objective knowledge and attitude toward wolves.

Additional associations showed that members of environmental groups had higher scores on all indices except attitude toward reintroduction (belief evaluation) (Table 17). Also, it was found that men had higher scores than women on objective knowledge, experience with wolves, and prior information about wolves.

East-West Differences Regarding Wolf Reintroduction

Results on a number of different variables indicated that attitudes toward wolf reintroduction were generally less positive among west slope residents of Colorado than among east slope residents. However, while these results were statistically significant, the magnitude of differences found was not large. For example, when asked how they would vote on this issue on the mail-back questionnaire, 73.8% of the east slope residents would vote yes to reintroduction compared to 65.1% of west slope residents (Figure 6). Further, telephone survey results indicated that 60.7% of east slope residents would vote yes to reintroduction compared to 58.4% of west slope residents.

Emotional responses to wolf reintroduction would be somewhat different between east slope and west slope residents. West slope residents are more likely to be angry, disgusted, and sad, while eastern residents were more likely to be agreeable (Table 18).

There was no difference between east slope and west slope respondents on comparisons of wolves to other threatened or endangered species and comparison of wolf reintroduction to providing wildlife viewing opportunities, wildlife education in schools, and protecting endangered species that already live in Colorado (Table 19). Much higher proportions of west slope residents than east slope residents indicated that providing

hunting opportunities (47.8% west slope compared to 29.1% east slope) and fishing opportunities (55.0% west slope, 38.9% east slope) were more important than wolf reintroduction. Small but significant differences were also found on protecting and improving habitat and preventing other species from becoming threatened or endangered, on which west slope residents had higher scores (indicating these activities were more important than wolf reintroduction) than east slope residents.

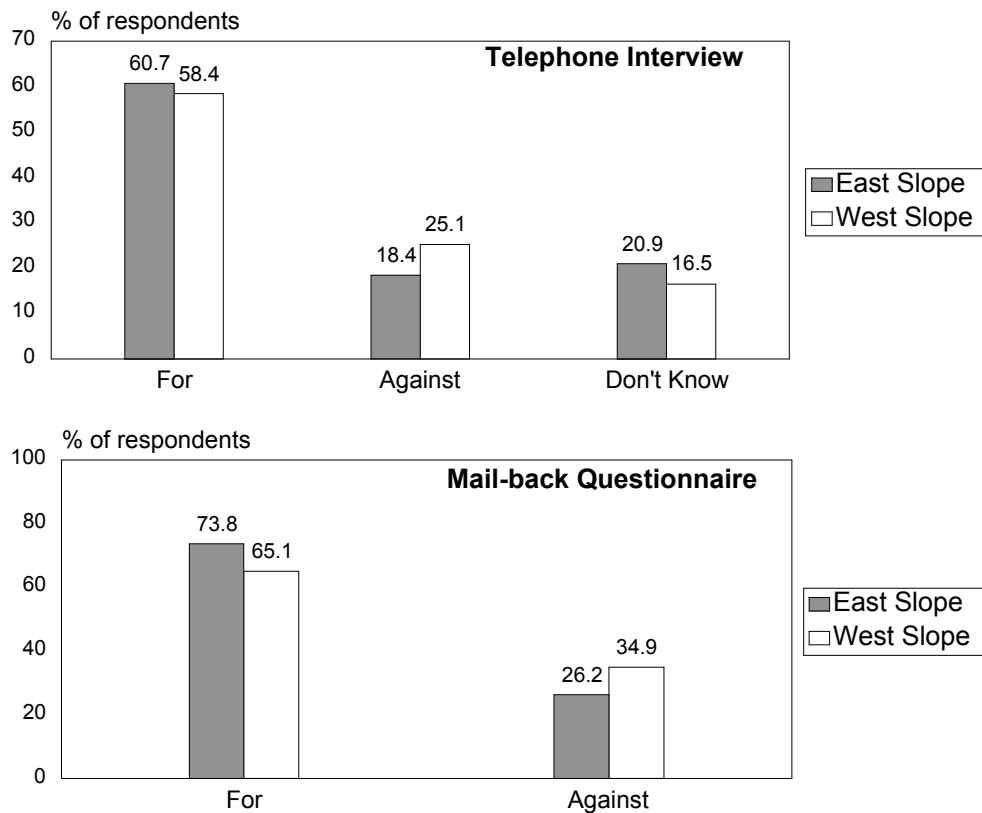


Figure 6. Mail and Telephone Responses to a Hypothetical Vote Regarding Gray Wolf Reintroduction, by Region.

A multivariate analysis of variance was conducted to test for the effects of region (east slope - west slope differences) and balanced information (comparing those who received position statements in the survey to those who did not) on eight of the attitude, belief, and knowledge indices. Results indicated that region produced a significant effect, but that balanced information did not produce a significant effect, and the interaction of balanced information and region was not significant ($p \leq .05$). Furthermore, among the eight indices tested, east slope-west slope differences were found on only five: knowledge about wolves, symbolic existence beliefs about wolves; and general attitude, belief-evaluation attitude, and personal importance of wolf reintroduction (Table 20).

Findings suggested that, compared to east slope residents, west slope residents placed more personal importance on wolf reintroduction (Table 21) and scored slightly higher on most objective knowledge questions (Table 22). Conversely, east slope residents had more positive attitudes toward reintroduction (Table 23) and stronger symbolic existence beliefs about wolves in Colorado (Table 24). East slope and west slope residents did not differ on attitudes toward wolves, experience with wolves, or prior information sources about wolves.

West slope residents evaluated several consequences of reintroduction differently than east slope residents. West slope residents rated attacks on livestock, ranchers losing money, increased tourism, and losses in deer and elk populations more negatively and control of rodent populations more positively than did east slope residents. West slope residents also agreed more strongly that reintroduction would result in ranchers killing wolves (Table 25).

Several regional differences were due to the differences between east slope and west slope residents with negative attitudes toward reintroduction and not between east slope and west slope residents with positive attitudes. Compared to east slope residents with negative attitudes, west slope residents with negative attitudes toward reintroduction disagreed more strongly (as indicated by agree-disagree scores) that reintroduction would keep deer and elk populations in balance, that attacks on humans would occur, and that reintroduction would preserve the wolf as a species. They also had more negative good-bad scores on ranchers losing money, preserving the wolf as a wildlife species, and returning the environment to the way it once was. Furthermore, those from the west slope with negative attitudes also had more negative belief-evaluation scores on ranchers losing money.

East slope and west slope residents were compared on their perceptions of selected agencies and interest groups involved in reintroduction. Results showed only one difference: there was stronger agreement among east slope residents that SINAPU was well-informed than there was among west slope residents (Table 26).¹

¹ After the questionnaires were mailed to respondents, it was discovered that there were two errors in the informational message that represented SINAPU's stand. They were: the use of the words "goo" for "good" and "exterminate" for "exterminated". In addition, SINAPU was identified as an organization "whose mission is to lobby" for wolf reintroduction instead of a group "who works as an advocate" for wolf reintroduction, a description they prefer. To subsequently test for effects of these errors, 122 individuals (not part of the original sample in this study) were provided with the information: 60 received the version that contained the errors, while 62 received the version with the errors corrected. Using t-tests to examine the effects of the errors, the group who received the errored message did not differ from the group who received the correct messages on the perceived knowledge and trustworthiness of any of the groups who provided the informational messages. Therefore, we concluded that the errors and organizational description we used had no effect on the results of our study.

Balanced Informational Effects

Balanced information provided with the questionnaire had no effect on survey responses. Results indicated that 73.4% of the “no balanced information group” would vote for reintroduction and 26.6% against, compared to 71.9% of the “balanced information group” for and 28.1% against.

An index was formed by multiplying vote (yes = 1, no = -1) times a variable measuring a person’s certainty of their vote (ranging from 0 “not certain” to 3 “extremely certain”). The resultant variable ranged from +3 (vote yes and extremely certain) to -3 (vote no and extremely certain). To provide additional tests for effects of balanced information, this index was regressed against the phone survey vote measure and the balanced information variable (yes-no to receiving balanced information). While the vote was strongly significant ($\beta = .72$, $T = 39.9$) balanced information was not a significant effect ($\beta = .19$, $T = 1.31$).

Other tests for differences were conducted on the eight attitude, knowledge, and experience indices using multivariate analysis of variance. Analysis revealed no effect due to balanced information.

It is unclear why balanced information had no effect on attitudes toward wolf reintroduction. One possibility is that people did not read the messages. It is estimated that the informational text would take 1 to 2 minutes to read. Given the number and relative complexity of arguments, people may have simply skimmed or skipped this section of the survey. As a consequence, no actual balanced information treatment occurred.

Another possible explanation is that the balance of arguments canceled out message effects. Related to this is the possibility that messages had no effect because their content was expected. For example, an expected message was that the Colorado Cattlemen’s Association was opposed to reintroduction; an unexpected message would be that they supported reintroduction. In a study examining informational effects on changing attitudes toward control burn fire policies, Bright, Manfredi, Fishbein, and Bath (1993) noted that the expected message (pro-controlled burn) had little effect, but there was an effect due to an unexpected message (anti-controlled burn).

One final explanation is that respondents may already have a strong belief structure on the wolf reintroduction issue. This would make reintroduction attitudes somewhat impervious to informational effects.

The Theoretical Aspects of the Conceptual Model

In addition to testing the specific effects of study factors on support for or opposition to wolf reintroduction, analysis was done to examine theoretical relationships between study factors and attitudes toward reintroducing wolves. This is explained in the following four sections. The first section examines the moderating influence of personal importance of the wolf reintroduction issue and objective knowledge about wolves on the effects of balanced information on general attitudes toward wolf reintroduction. In addition, this section addresses the effects of source credibility on support for or opposition to wolf reintroduction. In the second section, factors that influence attitudes toward wolves are examined. The third section examines two models, one cognitive and one affective, that describe the influence of belief-evaluations, emotions, and attitudes toward wolves on the general attitude toward wolf reintroduction. Finally, in section four, the extent to which general attitudes toward wolf reintroduction were able to predict support for/opposition to wolf reintroduction are examined.

The Influence of Balanced Information on General Attitudes Toward Wolf Reintroduction

Research in social psychology and natural resource management has suggested that the ability of balanced information to influence attitudes toward an issue may be moderated by the personal importance of the issue (Bright and Manfreda, in review) and knowledge about the issue (Davidson and Morrison, 1982). While it has already been determined that balanced information had no effect on support for or opposition to wolf reintroduction, this section examines whether personal importance of the wolf reintroduction issue and objective knowledge about wolves moderated the effects of balanced information on attitudes toward wolf reintroduction. Three-factor analysis of variance confirmed the inability of balanced information about wolf reintroduction to influence general attitudes ($F = .913$; $p = .339$) (Table 27). In addition, examination of the two-way interactions between balanced information and objective knowledge ($F = .165$; $p = .848$), balanced information and personal importance ($F = .354$; $p = .880$), and the three-way interaction between balanced information, objective knowledge, and personal importance ($F = .544$; $p = .859$) showed that personal importance and objective knowledge did not moderate the effects of balanced information on general attitudes toward wolf reintroduction.

Research in social psychology has suggested that when people do not elaborate on information about an issue, it is unlikely to influence attitudes and subsequent behavior (Petty and Cacioppo, 1986). In such a case, factors tangential to the information may influence behavior. One of these factors is the credibility of the source of information. In this study, SINAPU, the Colorado Cattlemen's Association, the Colorado Division of

Wildlife, and federal land management agencies provided information about their stands on wolf reintroduction in Colorado. Also, each of these groups were examined as to their perceived credibility by the public, measured as the extent to which each group was perceived by the public to be (a) well-informed and (b) biased in their views toward environmental, natural resource, or wildlife management issues. To determine if source credibility factors were related to the behavioral factor (support of/opposition to wolf reintroduction), logistic regression was conducted. In this analysis, support of or opposition to wolf reintroduction was regressed on each of the source credibility factors and the factor representing the availability of information about wolf reintroduction (Table 28). As expected, balanced information about wolf reintroduction did not influence support for/opposition to wolf reintroduction ($R = -.025$; $p = .184$). On the other hand, several source credibility factors did show a significant relationship with the behavioral measure. The most significant factor was the extent to which the public felt SINAPU was well informed about environmental, natural resource, or wildlife management issues ($R = .321$; $p = .000$). As an individual's perception that SINAPU was well informed increased, the likelihood that individual would support wolf reintroduction increased (in this analysis, positive values for R represented a positive relationship with support of wolf reintroduction). Other significant positive relationships were the extent to which an individual felt the Colorado Division of Wildlife was biased toward environmental, natural resource, or wildlife management issues ($R = .086$; $p = .000$) and the extent to which the public believe federal land management agencies were well-informed ($R = .063$; $p = .004$). Two source credibility factors showed a negative relationship with support of wolf reintroduction in Colorado. The more biased that an individual perceived SINAPU to be, the more likely that person was to oppose wolf reintroduction ($R = -.053$; $p = .012$). Similarly, the more well-informed that the Colorado Cattlemen's Association was perceived by an individual ($R = -.203$; $p = .000$), the more likely that individual would oppose wolf reintroduction.

Factors That Influence Attitudes Toward Wolves

A key factor that may influence an individual's attitude toward a behavior (in this study, supporting/opposing wolf reintroduction) is that person's attitude toward the object of the behavior (in this study, wolves) (Eagly and Chaiken, 1993). In addition, several factors may influence a person's attitude toward wolves. In this study, these factors included symbolic existence beliefs about wolves, stereotypes about wolves, experience with wolves, and objective knowledge about wolves. Multiple regression analysis was used to examine the effects of these factors on an individual's general attitude toward wolves (Table 29). By far, the most significant factor influencing attitudes toward wolves was the symbolic existence beliefs about wolves ($\beta = .629$, $p = .000$). More moderately, the stereotypes that individuals hold about wolves ($\beta = .244$, $p = .000$) and their objective knowledge about wolves ($\beta = .156$, $p = .000$) were found to be significant

predictors of attitudes toward wolves. The effect of experience with wolves on attitude toward wolves was not significant at $p < .05$ ($\beta = .030, p = .59$). These factors explained 71 percent of the variance in the public's attitudes toward wolves.

In addition, the amount of prior information about wolves was examined as to its relationship with objective knowledge. Using Pearson's correlation, there was a significant positive correlation between these two variables ($r = .376, p = .000$).

Cognitive and Affective Models of General Attitudes Toward Wolf Reintroduction

Consistent with research that has identified both a cognitive and affective component of attitudes (Eagly and Chaiken, 1993), this study examined the effect of (a) cognitive factors related to wolf reintroduction and (a) affective factors related to wolf reintroduction on general attitudes toward reintroducing wolves. Cognitive factors represent thoughts that people have about wolf reintroduction and were measured, for this analysis, as beliefs about outcomes of reintroducing wolves into Colorado and an evaluation of those outcomes. Affective factors represent feelings or emotions that people have regarding reintroducing wolves into Colorado. Two models were examined in this study, a cognitive model and an affective model. In addition to the cognitive and affective factors, each model also included the measure of attitudes toward wolves.

To test the cognitive model, general attitude toward wolf reintroduction was regressed on attitudes toward wolves and the beliefs-evaluations (Table 30). Both the attitudes toward wolves ($\beta = .597; p = .000$) and belief-evaluations ($\beta = .341; p = .000$) were significant predictors of general attitudes toward wolf reintroduction. The cognitive model explained 74 percent of the variance in general attitudes toward reintroducing wolves into Colorado.

In the affective model, general attitude toward wolf reintroduction was regressed on attitudes toward wolves, a measure of positive emotions related to wolf reintroduction and a measure of negative emotions (Table 31). In the affective model, the most significant factor predicting general attitudes toward wolf reintroduction were the positive emotions related to reintroducing wolves into Colorado ($\beta = .465; p = .000$). In addition, negative emotions ($\beta = -.313; p = .000$) and attitudes toward wolves ($\beta = .284; p = .000$) were significant predictors of general attitude toward wolf reintroduction. The affective model explained 83 percent of the variance in general attitudes toward wolf reintroduction.

The Ability of General Attitudes Toward Wolf Reintroduction to Predict Support for or Opposition to Wolf Reintroduction in Colorado

A significant amount of research in social psychology and natural resource management has explored whether attitudes toward a behavior can successfully predict actual behavior or behavior intention. One goal of this study was to determine if general attitudes toward wolf reintroduction could predict whether an individual would vote for or against wolf reintroduction, given the opportunity. Using point-biserial correlation (r_{pb}), results indicated that these two variables were highly correlated ($r_{pb} = .866$, $p < .001$). Therefore, an individual's attitude toward wolf reintroduction is highly predictive of whether that same individual would vote for or against wolf reintroduction.

Table 1. Comparison of Survey Respondents to Nonrespondents on Vote for Reintroduction of Wolves into Colorado.

Response Category	Region	N	Response (%)		
			For Reintroduction	Don't Know	Against Reintroduction
Nonrespondent	East	665	46.0	28.7	25.3
Respondent	East	701	74.8	13.8	11.4
Nonrespondent	West	390	44.5	26.6	28.9
Respondent	West	751	65.6	11.2	23.2

Table 2. Indices Regarding Wolves and Wolf Reintroduction (N=718).

Index Items Used for Construction of Index	Range Used for Construction of Index	Standard- ized Item Alpha
Symbolic Existence Beliefs About Wolves	1-7	.96
It is important that Colorado always have an abundant wolf population.		
Whether or not I would get to see a wolf, it is important to me that they exist in Colorado.		
We should be sure that future generations of Coloradoans have an abundant wolf population.		
It would be important to me to know that there are healthy populations of wolves in Colorado.		
It is important to maintain wolf populations in Colorado so future generations can enjoy them.		
Prior Sources of Information About Wolves	0-3	.81
Read a nonfictional book about wolves.		
Read a fictional book about wolves.		
Watched TV news report(s) about wolves.		
Read newspaper/magazine article(s) about wolves.		
Watched a TV documentary about wolves.		
Discussed wolves with others.		
Read a pamphlet about wolves distributed by an environmental or conservation group.		
Listened to a presentation about wolves by an environmental or conservation group		
Worked with an environmental or conservation group in a project that involved wolves.		
Experience with Wolves	1-7	.72
Saw a wolf in the wild.		
Heard the howl of a wolf in the wild.		
Saw the results of wolf presence.		
Saw a wolf in captivity.		
Attitude Toward Wolves	+3 to -3	.92
Would you say your general attitude toward wolves is positive, negative or neutral?		
In general, do you like or dislike wolves?		
In general, do you think wolves are beneficial or harmful animals?		

Table 2 (Continued)

Index Items Used for Construction of Index	Range Used for Construction of Index	Standard- ized Item Alpha
General Attitude Toward Wolf Reintroduction	1-7	.98
Do you think reintroducing the gray wolf into Colorado would be good, bad, or neither?		
Do you like or dislike the prospect of reintroducing the gray wolf into Colorado?		
Do you approve, disapprove, or neither of reintroducing the gray wolf into Colorado?		
Attitudes Toward Wolf Reintroduction (Belief Evaluation)	+3 to -3 Sum of the product of beliefs and belief evaluations.	.76
Reintroducing wolves would...		
... result in large numbers of wolf attacks on livestock.		
... result in ranchers losing money.		
... keep deer and elk populations in balance.		
... increase tourism in Colorado.		
... result in wolf attacks on humans.		
... preserve the wolf as a wildlife species.		
... return the natural environment back to the way it once was.		
... help people understand the importance of wilderness.		
... result in wolves wandering into residential areas.		
... result in ranchers killing wolves.		
... lead to large losses in deer and elk populations.		
... lead to greater control of rodent populations.		
Positive Emotions to Wolf Reintroduction (used as an index in tests of the conceptual model only)	0-6	.86
... happy		
... interested		
... agreeable		
Negative Emotions to Wolf Reintroduction (used as an index in tests of the conceptual model only)	0-6	.86
... surprised		
... fearful		
... angry		
... disgusted		
... sad		

Table 2 (Continued)

Index	Range Used for Construction of Index	Standard- ized Item Alpha
Items Used for Construction of Index		
Personal Importance of the Wolf Reintroduction Issue	0-6	.90
How important is it to you personally that you keep up to date with the issue of wolf reintroduction in Colorado?		
How important is it to you personally that the final decision regarding whether wolves are reintroduced in Colorado is the same as what you think the decision should be?		
How important is the issue of wolf reintroduction in Colorado to you personally?		
Objective Knowledge About Wolves	Summation of correct responses to true/false statements.	
There used to be wolves in Colorado.		
In areas where wolves live in close proximity to humans, wolf attacks on humans are common.		
Wolves avoid contact with humans.		
Currently, wolves are not being considered for reintroduction in any western states.		
In areas where wolves exist near livestock, their primary food is sheep and cattle.		
Wolves are only found in North America.		
Wolves are a major threat to pets in residential areas.		
Timber wolf and gray wolf are names for two different kinds of wolves.		
Wolves will not eat animals that are already dead.		
Only one pair of wolves in a wolf pack breeds in any one year.		
Wolves will kill cattle and sheep only if there are not enough deer and elk.		
Wolves are in danger of becoming extinct.		

Table 3. Attitudes Toward Wolf Reintroduction in Colorado, for all Coloradoans (N=718).

Do you think reintroducing the gray wolf into Colorado would be good, bad, or neither?	Extremely Bad % 9.7	Moderately Bad % 5.5	Slightly Bad % 4.9	Neither % 17.0	Slightly Good % 16.1	Moderately Good % 28.7	Extremely Good % 18.1
Do you like or dislike the prospect of reintroducing the gray wolf into Colorado?	Strongly Dislike % 12.6	Moderately Dislike % 4.2	Slightly Dislike % 3.8	Neither % 10.6	Slightly Like % 13.3	Moderately Like % 27.2	Extremely Like % 28.3
Do you approve, disapprove, or neither of reintroducing the gray wolf into Colorado?	Strongly Disapprove % 11.7	Moderately Disapprove % 3.7	Slightly Disapprove % 4.5	Neither % 11.3	Slightly Approve % 14.7	Moderately Approve % 25.7	Strongly Approve % 28.4

Table 4. Means of Indices, for all Coloradoans (N=718).

Index ^a	Mean	SD
Objective Knowledge About Wolves	5.83	2.18
Symbolic Existence Beliefs About Wolves	4.66	1.90
Prior Sources of Information About Wolves	1.92	1.02
Experience with Wolves	1.85	1.52
Attitude Toward Wolves	1.16	1.64
General Attitude Toward Wolf Reintroduction	.95	1.91
Attitudes Toward Wolf Reintroduction (Belief Evaluation)	1.47	2.22
Positive Emotions Toward Wolf Reintroduction	3.82	1.78
Negative Emotions Toward Wolf Reintroduction	1.01	1.45
Personal Importance of the Wolf Reintroduction Issue	3.29	1.73

^a Please see Table 2 for a list of items and range of scale used in each index.

Table 5. Emotional Responses to Wolf Reintroduction, for all Coloradoans (N=718)

	Means			Not at all:	Percentages							:Extremely
	Positive	Negative	F-Test		0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)	
How strongly do you feel each emotion when you think about the prospect of the gray wolf being reintroduced into Colorado?												
Happy	4.07	1.00	542.2*		18.4	9.6	5.9	16.4	17.2	15.8	16.7	
Fearful	1.18	2.64	104.6*		41.8	19.5	8.0	10.9	9.8	6.8	3.2	
Surprised	2.24	2.17	.19		30.4	12.6	8.2	21.0	15.3	7.1	5.4	
Angry	.37	2.20	214.5*		71.5	7.0	3.1	8.4	2.7	2.9	4.4	
Interested	4.58	2.57	213.9*		8.4	5.8	4.3	17.1	15.2	22.4	26.8	
Disgusted	.30	2.16	223.2*		75.1	5.4	2.1	7.2	3.1	1.8	5.3	
Sad	.52	1.82	107.9*		68.7	9.2	4.3	8.6	3.1	2.8	3.3	
Agreeable	4.65	1.28	695.6*		15.3	7.3	4.9	12.9	13.2	18.3	28.0	

* $p < .001$

Table 6. Personal Importance of Wolf Reintroduction in Colorado, for all Coloradoans (N=718).

	Not at all Important:	0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)	Extremely Important
How important is it to you personally that you keep up to date with the issue of wolf reintroduction in Colorado?		12.3	9.1	9.6	22.2	20.6	13.4	12.8	
How important is it to you personally that the final decision regarding whether wolves are reintroduced in Colorado is the same as what you think the decision should be?		13.0	9.7	5.7	21.6	18.9	18.2	12.9	
How important is the issue of wolf reintroduction in Colorado to you personally?		12.6	9.9	7.7	15.1	22.4	19.0	13.3	

Table 7. Importance of Substitute Activities and Colorado Division of Wildlife Activities, for all Coloradoans (N=718).

Substitute Species or Activity	Extremely Less Important (%)	Moderately Less Important (%)	Slightly Less Important (%)	Of the Same Importance (%)	Slightly More Important (%)	Moderately More Important (%)	Extremely More Important (%)
Substitute Species							
Protecting the greenback cutthroat trout is _____ than reintroducing the gray wolf in Colorado.	4.4	6.3	10.3	48.5	5.5	12.8	12.2
Protecting the river otter is _____ than reintroducing the gray wolf in Colorado.	1.8	1.0	5.6	56.6	10.9	15.0	9.1
Protecting the peregrine falcon is _____ than reintroducing the gray wolf in Colorado.	1.3	.8	2.6	55.3	9.7	18.0	12.3
Protecting the bald eagle is _____ than reintroducing the gray wolf in Colorado.	1.0	1.0	1.2	40.3	6.4	15.7	34.4

Table 7 (Continued)

Substitute Species or Activity	Extremely Less Important (%)	Moderately Less Important (%)	Slightly Less Important (%)	Of the Same Importance (%)	Slightly More Important (%)	Moderately More Important (%)	Extremely More Important (%)
Colorado Division of Wildlife Activity							
Providing hunting opportunities is _____ than reintroducing the gray wolf in Colorado.	19.7	15.0	14.2	15.2	11.5	12.1	12.3
Providing fishing opportunities is _____ than reintroducing the gray wolf in Colorado.	8.2	8.6	15.9	21.5	12.5	15.9	17.4
Providing wildlife viewing opportunities is _____ than reintroducing the gray wolf in Colorado.	6.1	7.9	13.4	34.1	12.8	15.3	10.4
Providing wildlife education in schools is _____ than reintroducing the gray wolf in Colorado.	1.2	2.9	6.0	32.3	15.1	22.0	20.5

Table 7 (Continued)

Substitute Species or Activity	Extremely Less Important (%)	Moderately Less Important (%)	Slightly Less Important (%)	Of the Same Importance (%)	Slightly More Important (%)	Moderately More Important (%)	Extremely More Important (%)
Protecting and improving wildlife habitat is _____ than reintroducing the gray wolf in Colorado.	0.6	1.4	2.1	35.2	17.1	22.4	21.2
Protecting endangered or threatened species that already live in Colorado is _____ than reintroducing the gray wolf in Colorado.	0.3	0.5	0.9	37.6	15.9	20.4	24.4
Preventing other species in Colorado from becoming threatened or endangered is _____ than reintroducing the gray wolf in Colorado.	0.3	0.8	0.7	38.0	17.9	20.5	21.8

Table 8. Beliefs Forming the Basis for Wolf Reintroduction, for all Coloradoans.

Consequence Items	Negative		Positive		F-Test
	Mean	SD	Mean	SD	
Reintroducing wolves would...					
... result in large numbers of wolf attacks on livestock.					
BE Product	-2.59	4.78	2.31	3.47	229.96**
Bad-Good	-2.47	.99	-1.89	1.15	40.50**
Disagree-Agree	.86	1.69	-1.21	1.47	263.72**
... result in ranchers losing money.					
BE Product	-2.90	4.48	.83	3.43	142.31**
Bad-Good	-2.24	1.08	-1.62	1.29	37.00**
Disagree-Agree	1.03	1.56	-.73	1.58	182.85**
... keep deer and elk populations in balance.					
BE Product	.14	3.42	4.41	3.43	225.12**
Bad-Good	1.15	1.40	2.15	.98	117.55**
Disagree-Agree	.04	1.71	1.81	1.11	265.74**
... increase tourism in Colorado.					
BE Product	-.89	4.19	.85	2.90	39.68**
Bad-Good	.73	1.69	1.02	1.62	4.52
Disagree-Agree	-1.34	1.49	.30	1.50	176.31**
... result in wolf attacks on humans.					
BE Product	.43	4.66	3.88	4.47	84.57**
Bad-Good	-2.48	1.15	-2.32	1.16	2.69
Disagree-Agree	-.23	1.69	-1.67	1.53	122.99**
... preserve the wolf as a wildlife species.					
BE Product	.71	3.42	5.25	3.44	255.36**
Bad-Good	.41	1.62	2.39	0.88	437.26**
Disagree-Agree	.26	1.67	2.00	1.13	255.31**
... return the natural environment back to the way it once was.					
BE Product	.34	3.56	2.99	3.90	70.38**
Bad-Good	.21	1.47	1.97	1.16	284.31**
Disagree-Agree	-.95	1.74	.95	1.75	171.23**

Table 8 (Continued)

Consequence Items	Negative		Positive		F-Test
	Mean	SD	Mean	SD	
... help people understand the importance of wilderness.					
BE Product	-1.96	3.40	3.66	3.74	348.58**
Bad-Good	1.40	1.26	2.49	.81	187.25**
Disagree-Agree	-1.23	1.59	1.26	1.39	428.35**
... result in wolves wandering into residential areas.					
BE Product	-2.06	4.32	1.76	3.70	140.41**
Bad-Good	-2.32	1.05	-1.77	1.18	34.35**
Disagree-Agree	.77	1.56	-.84	1.62	148.15**
... result in ranchers killing wolves.					
BE Product	.42	4.53	-3.11	3.53	121.30**
Bad-Good	-.12	1.75	-1.71	1.22	187.31**
Disagree-Agree	1.80	1.29	1.80	1.10	.00
... lead to large losses in deer and elk populations.					
BE Product	-.53	4.26	2.01	3.42	69.41**
Bad-Good	-1.66	1.51	-1.25	1.45	10.92**
Disagree-Agree	.19	1.80	-1.33	1.39	145.81**
... lead to greater control of rodent populations.					
BE Product	.86	3.69	3.66	3.93	66.72**
Bad-Good	1.49	1.44	1.95	1.22	18.53**
Disagree-Agree	.53	1.57	1.54	1.38	71.52**

*p < .01

**p < .001

Scale points included: -3 (strongly disagree), -2 (moderately disagree), -1 (slightly disagree), 0 (neither), 1 (slightly agree), 2 (moderately agree), 3 (strongly agree); -3 (extremely bad), -2 (moderately bad), -1 (slightly bad), 0 (neither), 1 (slightly good), 2 (moderately good), 3 (extremely good).

BE product is the multiplication of the agree-disagree scale and the good-bad scale (each ranged from -3 to +3). It ranged from -9 to +9.

Note: a positive score could be the result of a negative agree-disagree score (indicating unlikely the item would occur) and a negative good-bad score (indicating bad).

Table 9. Attitudes Toward Wolves, for all Coloradoans (N=718).

Would you say your general attitude toward wolves is positive, negative, or neutral?	Extremely Negative (%) 4.7	Moderately Negative (%) 5.8	Slightly Negative (%) 4.9	Neutral (%) 20.4	Slightly Positive (%) 10.6	Moderately Positive (%) 28.0	Extremely Positive (%) 25.6
In general, do you like or dislike wolves?	Strongly Dislike (%) 5.3	Moderately Dislike (%) 4.0	Slightly Dislike (%) 3.7	Neither (%) 17.9	Slightly Like (%) 13.4	Moderately Like (%) 27.3	Strongly Like (%) 28.4
In general, do you think wolves are beneficial or harmful animals?	Extremely Harmful (%) 4.9	Moderately Harmful (%) 6.3	Slightly Harmful (%) 6.9	Neither (%) 13.7	Slightly Beneficial (%) 14.6	Moderately Beneficial (%) 31.0	Extremely Beneficial (%) 22.6

Table 10. Stereotypes that Study Respondents Associate with Wolves.

Characteristics Identified as Positive	Frequency of Response	Characteristics Identified as Negative	Frequency of Response	Characteristics Identified as Neutral	Frequency of Response
Beautiful	273	Pack Oriented	105	Pack Oriented	69
Intelligent	262	Predators	92	Predators	53
Wild	140	Dangerous	78	Wild	41
Shy	137	Killers	50	Carnivorous	32
Predators	117	Aggressive	50	Hunters	32
Family Oriented	100	Wild	48	Shy	21
Pack Oriented	100	Fierce	38	Territorial	19
Hunters	72	Carnivorous	35	Aggressive	15
Strong	61	Vicious	28	Intelligent	15
Cunning	54	Unpredictable	22	Dangerous	14
Social	53	Misunderstood	22	Friendly	14
Loyal	48	Mean	20	Cunning	12
Territorial	43	Hunters	19	Social	12
Mysterious	41	Endangered	19	Familial	12
Majestic	40	Cunning	16	Beautiful	11

Each respondent was asked to attribute up to six characteristics to wolves and indicate if they viewed the characteristic as positive, negative, or neutral.

Total number of subjects was 1,452. This includes east slope and west slope respondents and those who received balanced information and those who did not. These results are unweighted.

Table 11. Symbolic Existence Beliefs About Wolves, for all Coloradoans (N=718).

	Strongly Disagree (%)	Moderately Disagree (%)	Slightly Disagree (%)	Neither (%)	Slightly Agree (%)	Moderately Agree (%)	Strongly Agree (%)
It is important that Colorado always have an abundant wolf population.	15.2	9.0	8.2	16.9	14.1	22.7	13.9
Whether or not I would get to see a wolf, it is important to me that they exist in Colorado.	12.7	5.8	2.3	12.9	17.7	18.2	30.4
We should be sure that future generations of Coloradoans have an abundant wolf population.	14.0	9.0	6.5	14.6	18.3	21.8	15.8
It would be important to me to know that there are healthy populations of wolves in Colorado.	12.8	5.3	4.6	11.5	16.4	20.3	29.1
It is important to maintain wolf populations in Colorado so future generations can enjoy them.	14.9	4.3	6.3	10.5	20.1	16.8	27.1

Table 12. Experience With Wolves, for all Coloradoans (N=718).

Experience	Have you had this experience?		Was this experience positive, negative, or neutral for you?						
	Yes (%)	No (%)	Extremely Negative (%)	Moderately Negative (%)	Slightly Negative (%)	Neutral (%)	Slightly Positive (%)	Moderately Positive (%)	Extremely Positive (%)
Saw a wolf in the wild.	23.4	76.6	4.0	1.6	5.1	21.6	7.8	24.2	35.7
Heard the howl of a wolf in the wild.	37.1	62.9	2.7	3.0	9.1	16.3	12.8	21.7	34.4
Saw the results of wolf presence.	18.2	81.8	8.8	7.1	7.9	24.4	12.9	14.1	24.8
Saw a wolf in captivity.	83.0	17.0	11.9	12.8	11.8	27.1	11.2	13.4	11.8

Table 13. Prior Sources of Information Regarding Wolves, for all Coloradoans (N=718).

	Never (%)	Only Once (%)	A Few Times (%)	Many Times (%)
Read a nonfictional book about wolves.	49.2	19.6	26.6	4.6
Read a fictional book about wolves.	29.2	22.1	40.4	8.3
Watched TV news report(s) about wolves.	14.8	11.6	53.4	20.2
Read newspaper/magazine article(s) about wolves.	17.2	9.8	52.3	20.7
Watched a TV documentary about wolves.	18.1	21.6	42.5	17.8
Discussed wolves with others.	30.6	11.6	42.5	15.3
Read a pamphlet about wolves distributed by an environmental or conservation group.	68.6	15.9	12.2	3.3
Listened to a presentation about wolves by an environmental or conservation group.	77.7	11.7	8.9	1.7
Worked with an environmental or conservation group in a project that involved wolves.	95.6	1.8	2.3	.3

Table 14. Perceptions of Bias and How Well-informed Groups are on Environmental, Natural Resource, or Wildlife Management Issues, for all Coloradoans (N=718).

	Means		Strongly Disagree (%)	Moderately Disagree (%)	Slightly Disagree (%)	Neither (%)	Slightly Agree (%)	Moderately Agree (%)	Strongly Agree (%)
	Mean	SD							
Colorado Division of Wildlife									
Well-informed	5.64	1.43	1.9	2.8	4.3	8.4	17.9	31.8	32.9
Biased	4.20	1.76	9.4	11.9	9.5	22.6	21.7	14.6	10.3
Federal Land Management Agencies									
Well-informed	4.68	1.64	5.3	7.2	10.2	17.2	23.0	25.7	11.4
Biased	4.54	1.54	4.9	6.4	7.6	30.8	21.1	19.2	10.0
SINAPU									
Well-informed	4.66	1.75	7.7	7.9	6.7	18.7	17.9	29.2	11.9
Biased	4.79	1.66	5.6	7.0	7.0	15.9	27.0	22.4	15.1
Colorado Cattlemen's Association									
Well-informed	3.90	1.77	11.2	12.7	20.8	13.2	22.0	12.4	7.7
Biased	5.18	1.75	7.0	3.7	5.4	9.5	23.5	24.3	26.6

Table 15. Objective Knowledge Regarding Wolves, for all Coloradoans (N=718).

Item	True (%)	Not Sure (%)	False (%)
There used to be wolves in Colorado.	88.9	10.4	0.7
In areas where wolves live in close proximity to humans, wolf attacks on humans are common.	2.0	9.6	88.4
Wolves avoid contact with humans.	77.8	13.4	8.8
Currently, wolves are not being considered for reintroduction in any western states.	8.5	27.0	64.5
Wolves are only found in North America.	9.2	35.1	55.7
In areas where wolves exist near livestock, their primary food is sheep and cattle.	15.1	31.0	53.9
Wolves are a major threat to pets in residential areas.	19.2	28.7	52.1
Wolves will not eat animals that are already dead.	9.8	52.2	38.0
Only one pair of wolves in a wolf pack breeds in any one year.	23.9	58.5	17.6
Wolves will kill cattle and sheep only if there are not enough deer and elk.	53.7	29.9	16.4
Wolves are in danger of becoming extinct.	60.2	24.0	15.8
Timber wolf and gray wolf are names for two different kinds of wolves.	42.5	43.4	14.1

Correct Response

Table 16. Correlations Between Education, Age, Size of Community, Perceived Distance from Wolf Reintroduction, and Indices, for All Coloradoans (N=718).

Index	Education	Age	Size of Community	Distance from Reintroduction
Objective Knowledge About Wolves	.13*	-.03	-.03	.01
Symbolic Existence Beliefs About Wolves	.06	-.32**	.25**	.20**
Prior Sources of Information About Wolves	.02	-.13**	.06	.00
Experience with Wolves	.04	-.13**	.05	-.11*
Attitude Toward Wolves	.13**	-.33**	.23**	.19**
General Attitude Toward Wolf Reintroduction	.09	-.30**	.28**	.22**
Attitudes Toward Wolf Reintroduction (Belief Evaluation)	.04	-.13**	.18**	.18**
Personal Importance of the Wolf Reintroduction Issue	-.03	-.18**	.00	.01

* $p < .01$

** $p < .001$

Table 17. Mean Environmental Membership and Gender Differences on Indices, for All Coloradoans (N=718).

Index	Environmental Membership			Gender		
	Yes	No	F-Test	Male	Female	F-Test
Objective Knowledge About Wolves	6.49	5.77	8.32*	6.56	5.37	57.57**
Symbolic Existence Beliefs About Wolves	5.50	4.55	18.96**	4.64	4.69	.10
Prior Sources of Information About Wolves	2.56	1.83	39.05**	2.17	1.73	33.41**
Experience with Wolves	2.43	1.81	14.45**	2.06	1.72	8.52*
Attitude Toward Wolves	2.00	1.05	25.45**	1.19	1.15	.11
General Attitude Toward Wolf Reintroduction	5.76	4.84	17.72**	4.93	5.00	.29
Attitudes Toward Wolf Reintroduction (Belief Evaluation)	2.02	1.39	5.94	1.50	1.51	.00
Personal Importance of the Wolf Reintroduction Issue	4.30	3.15	34.61**	3.41	3.21	2.40

* $p < .01$

** $p < .001$

Table 18. Emotional Responses to Wolf Reintroduction, by Region.

	East Slope		West Slope		
	Mean	SD	Mean	SD	F-Test
How strongly do you feel each emotion when you think about the prospect of the gray wolf being reintroduced into Colorado?					
Happy	3.31	2.06	3.06	2.19	4.79*
Fearful	1.56	1.78	1.68	1.92	1.47
Surprised	2.28	1.90	2.34	2.09	.32
Angry	.86	1.64	1.22	2.02	13.03***
Interested	4.07	1.84	4.19	1.83	1.57
Disgusted	.75	1.61	1.14	2.04	15.46***
Sad	.80	1.54	1.04	1.85	6.51*
Agreeable	3.78	2.12	3.36	2.29	12.69***

* $p < .05$

** $p < .01$

*** $p < .001$

Scale ranged from: 0 (not at all) to 6 (extremely).

Table 19. Importance of Substitute Activities and Colorado Division of Wildlife Activities, by Region.

Substitute Species or Activity	East Slope		West Slope		F-Test
	Mean	SD	Mean	SD	
Substitute Species					
Protecting the _____ is “extremely”, “moderately”, or “slightly” more or less important (or of the same importance) than reintroducing the gray wolf into Colorado.					
Greenback cutthroat trout	4.37	1.50	4.41	1.56	.22
River otter	4.58	1.22	4.67	1.34	1.8
Peregrine falcon	4.80	1.25	4.91	1.36	2.8
Bald eagle	5.38	1.40	5.51	1.48	3.2
Colorado Division of Wildlife Activity					
Each activity is “extremely”, “moderately”, or “slightly” more or less important (or of the same importance) than reintroducing the gray wolf into Colorado.					
Providing hunting opportunities	3.63	2.04	4.41	2.08	50.6** *
Providing fishing opportunities	4.35	1.88	4.87	1.80	28.0** *
Providing wildlife viewing opportunities	4.43	1.54	4.51	1.72	.97
Providing wildlife education in schools	5.09	1.39	5.20	1.47	2.3
Protecting and improving wildlife habitat	5.24	1.28	5.43	1.32	7.4**
Protecting endangered or threatened species that already live in Colorado	5.30	1.25	5.43	1.33	3.7
Preventing other species in Colorado from becoming threatened or endangered	5.27	1.26	5.42	1.34	4.9*

* $p < .05$

** $p < .01$

*** $p < .001$

Scale points included: 1 (extremely less important), 2 (moderately less important), 3 (slightly less important), 4 (of the same importance), 5 (slightly more important), 6 (moderately more important), 7 (extremely more important).

Table 20. Means of Indices, by Region.

Index ^a	East Slope		West Slope		F-Test
	Mean	SD	Mean	SD	
Objective Knowledge About Wolves	5.83	2.05	6.22	2.08	8.89**
Symbolic Existence Beliefs About Wolves	4.73	1.88	4.36	2.05	12.18***
Prior Sources of Information about Wolves	2.00	1.05	2.09	1.01	3.28
Experience with Wolves	2.01	1.63	1.95	1.64	.40
Attitude Toward Wolves	1.24	1.57	1.11	1.64	2.41
General Attitude Toward Wolf Reintroduction	5.05	1.87	4.59	2.12	18.96***
Attitudes Toward Wolf Reintroduction (Belief Evaluation)	1.55	2.19	1.16	2.43	9.99**
Personal Importance of the Wolf Reintroduction Issue	3.29	1.71	3.70	1.64	21.86***

** $p < .01$

*** $p < .001$

^a Please see Table 2 for a list of items and range of scale used in each index.

Table 21. Personal Importance of Wolf Reintroduction in Colorado, by Region.

	East Slope		West Slope		F-Test
	Mean	SD	Mean	SD	
How important is it to you personally that you keep up to date with the issue of wolf reintroduction in Colorado?	3.24	1.82	3.65	1.75	19.12***
How important is it to you personally that the final decision regarding whether wolves are reintroduced in Colorado is the same as what you think the decision should be?	3.27	1.88	3.77	1.82	24.58***
How important is the issue of wolf reintroduction in Colorado to you personally?	3.34	1.90	3.69	1.85	12.09***

*** $p < .001$

Scale ranged from: 0 (not at all important) to 6 (extremely important).

Table 22. Objective Knowledge Regarding Wolves, by Region.

Item	True (%)	Not Sure (%)	False (%)
There used to be wolves in Colorado.			
East Slope	90.7	8.8	.5
West Slope	91.6	8.1	.3
In areas where wolves live in close proximity to humans, wolf attacks on humans are common.			
East Slope	1.8	11.7	86.5
West Slope	2.5	12.2	85.3
Wolves avoid contact with humans.			
East Slope	78.7	14.7	6.6
West Slope	81.8	11.6	6.7
Currently, wolves are not being considered for reintroduction in any western states.			
East Slope	7.6	25.8	66.6
West Slope	6.6	26.2	67.1
Wolves are only found in North America.			
East Slope	8.4	36.3	55.3
West Slope	7.1	30.3	62.6
In areas where wolves exist near livestock, their primary food is sheep and cattle.			
East Slope	14.6	30.3	55.1
West Slope	16.6	24.5	59.0
Wolves are a major threat to pets in residential areas.			
East Slope	19.7	28.3	52.0
West Slope	19.7	24.8	55.0
Wolves will not eat animals that are already dead.			
East Slope	12.1	50.3	37.6
West Slope	10.5	43.9	45.6
Only one pair of wolves in a wolf pack breeds in any one year.			
East Slope	24.2	56.5	19.3
West Slope	22.7	52.3	25.0
Timber wolf and gray wolf are names for two different kinds of wolves.			
East Slope	44.2	41.9	13.9
West Slope	39.0	42.8	18.2
Wolves will kill cattle and sheep only if there are not enough deer and elk.			
East Slope	55.2	31.6	13.2
West Slope	52.6	25.8	21.5
Wolves are in danger of becoming extinct.			
East Slope	59.4	23.2	17.4
West Slope	51.5	24.0	24.5

Correct Response

Table 23. Attitudes Toward Wolf Reintroduction, by Region.

	East Slope		West Slope		F-Test
	Mean	SD	Mean	SD	
Do you think reintroducing the gray wolf into Colorado would be good, bad or neither? ^a	4.93	1.82	4.52	2.05	16.15
Do you like or dislike the prospect of reintroducing the gray wolf into Colorado? ^b	5.14	1.98	4.67	2.23	17.82
Do you approve, disapprove, or neither of reintroducing the gray wolf into Colorado? ^c	5.09	1.95	4.62	2.21	18.09

^a Scale points included: 1 (extremely bad), 2 (moderately bad), 3 (slightly bad), 4 (neither), 5 (slightly good), 6 (moderately good), 7 (extremely good)

^b Scale points included: 1 (strongly dislike), 2 (moderately dislike), 3 (slightly dislike), 4 (neither), 5 (slightly like), 6 (moderately like), 7 (strongly like).

^c Scale points included: 1 (strongly disapprove), 2 (moderately disapprove), 3 (slightly disapprove), 4 (neither), 5 (slightly approve), 6 (moderately approve), 7 (strongly approve).

All F-tests were significant at the .001 level.

Table 24. Symbolic Existence Beliefs About Wolves, by Region.

	East Slope		West Slope		F-Test
	Mean	SD	Mean	SD	
It is important that Colorado always have an abundant wolf population.	4.34	1.98	3.99	2.09	10.64***
Whether or not I would get to see a wolf, it is important to me that they exist in Colorado.	4.97	2.05	4.64	2.20	8.79**
We should be sure that future generations of Coloradans have an abundant wolf population.	4.55	1.97	4.13	2.17	14.61***
It would be important to me to know that there are healthy populations of wolves in Colorado.	4.96	2.02	4.59	2.22	10.54**
It is important to maintain wolf populations in Colorado so future generations can enjoy them.	4.86	2.06	4.47	2.21	11.98***

** $p < .01$

*** $p < .001$

Scale points included: 1 (strongly disagree), 2 (moderately disagree), 3 (slightly disagree), 4 (neither), 5 (slightly agree), 6 (moderately agree), 7 (strongly agree).

Table 25. East-West Differences on Belief Agreement, Evaluation, and BE Products Basis by Attitude Toward Reintroduction, by Region.

Consequence Items	East Slope				West Slope				F-Test			
	Positive		Negative		Positive		Negative		Attitude	Region	Inter.	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD				
Reintroducing wolves would...												
...result in large numbers of wolf attacks on livestock.												
Disagree-Agree	-1.49	1.40	.61	1.71	-1.39	1.47	1.02	1.80	649.7***	5.1*	2.5	
Bad-Good	-1.83	1.12	-2.48	.91	-1.96	1.10	-2.67	.76	139.3***	7.3**	.1	
BE Product	2.71	3.40	-1.99	4.77	2.54	3.78	-3.00	5.20	483.3***	3.98*	3.1	
...result in ranchers losing money.												
Disagree-Agree	-.86	1.59	.97	1.56	-.74	1.65	1.43	1.55	485.9***	6.4	3.3	
Bad-Good	-1.64	1.17	-2.25	1.02	-1.78	1.18	-2.55	.91	123.7***	9.8**	1.3	
BE Product	1.08	3.45	-2.76	4.35	1.04	3.67	-3.99	4.47	416.9***	4.1*	7.1**	
...keep deer and elk populations in balance.												
Disagree-Agree	1.83	1.13	.27	1.66	1.64	1.34	-.51	1.97	505.9***	23.3***	10.7***	
Bad-Good	2.16	.95	1.25	1.32	2.17	.98	1.38	1.54	165.9***	.6	1.2	
BE Product	4.49	3.44	.86	3.42	3.96	3.73	-.71	4.59	381.1***	18.5***	5.8*	
...increase tourism in Colorado.												
Disagree-Agree	.65	1.45	-1.27	1.61	.62	1.46	-1.40	1.48	548.7***	.7	0.3	
Bad-Good	1.22	1.54	.69	1.70	.96	1.81	.43	1.81	28.5***	7.8**	0.0	
BE Product	1.37	3.13	-.89	4.21	1.34	3.46	-.39	4.04	91.9***	.5	1.62	
...result in wolf attacks on humans.												
Disagree-Agree	-1.81	1.47	-.38	1.67	-1.96	1.40	.00	1.83	366.1***	0	8.3**	
Bad-Good	-2.26	1.24	-2.52	1.15	-2.23	1.27	-2.55	1.16	23.1***	0	.2	
BE Product	4.09	4.36	.91	4.68	4.35	4.38	-.03	5.13	214.6***	.2	5.2*	

Table 25 (Continued)

Consequence Items	East Slope				West Slope				F test		
	Positive		Negative		Positive		Negative		Attitude	Region	Inter.
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
Reintroducing wolves would...											
...preserve the wolf as a wildlife species.											
Disagree-Agree	1.75	1.34	-.13	1.76	1.81	1.38	-0.58	1.95	595.3***	1.7	7.9**
Bad-Good	2.40	.85	.65	1.53	2.47	.76	.26	1.79	886.7***	1.35	11.2***
BE Product	4.67	3.82	.24	3.54	4.74	3.97	.33	4.05	395.2***	.1	0
...return the natural environmental back to the way it once was.											
Disagree-Agree	.92	1.75	-.97	1.75	.72	1.84	-1.41	1.85	391.6***	6.3*	1.48
Bad-Good	2.00	1.16	.26	1.48	1.99	1.10	-.28	1.62	760.6***	7.6**	12.9***
BE Product	2.90	4.01	-.06	4.55	2.37	4.33	1.22	4.14	70.9***	.1	14.7***
...help people understand the importance of wilderness											
Disagree-Agree	1.23	1.38	-1.24	1.64	1.22	1.47	-1.60	1.63	967.1***	2.0	3.6
Bad-Good	2.48	.78	1.45	1.17	2.51	.80	1.45	1.53	316.0***	.1	0
BE Product	3.43	3.81	-1.82	3.65	-1.96	4.51	1.49	4.97	552.5***	0	.2
...result in wolves wandering into residential areas.											
Disagree-Agree	-.90	1.63	.70	1.61	-.90	1.62	.98	1.62	356.6***	1.0	2.0
Bad-Good	-1.72	1.19	-2.38	1.14	-1.72	1.15	-2.36	1.22	95.2***	0	0
BE Product	1.62	3.67	-1.96	4.60	1.62	3.60	-2.60	4.46	305.1***	1.0	2.0

Table 25 (Continued)

Consequence Items	East Slope				West Slope				F-Test			
	Positive		Negative		Positive		Negative		Attitude	Region	Inter.	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD				
Reintroducing wolves would...												
...result in ranchers killing wolves.												
Disagree-Agree	1.67	1.14	1.66	1.34	1.80	1.07	2.06	1.18	3.8	11.3***	3.9*	
Bad-Good	-1.78	1.20	-.19	1.80	-1.70	1.32	-.01	1.90	375.0***	2.0	.3	
BE Product	-3.11	3.69	.43	4.42	-3.13	3.67	.15	4.89	226.7***	.2	.3	
...lead to large losses in deer and elk populations.												
Disagree-Agree	-1.38	1.39	.10	1.66	-1.55	1.32	.73	1.92	490.9***	1.53	18.9***	
Bad-Good	-1.28	1.40	-1.41	1.52	-1.52	1.46	-1.89	1.46	10.2***	17.1***	2.3	
BE Product	2.11	3.41	-.29	3.71	2.30	3.74	-1.73	4.93	220.9***	2.6	13.4***	
...lead to greater control of rodent populations.												
Disagree-Agree	1.47	1.35	.41	1.62	1.66	1.39	.43	1.72	184.7***	2.9	.7	
Bad-Good	1.91	1.20	1.43	1.48	2.08	1.17	1.60	1.40	43.8***	6.8**	0	
BE Product	3.32	3.80	.56	3.69	4.00	3.95	1.21	3.90	159.3***	10.5***	0	

* $p < .05$ ** $p < .01$ *** $p < .001$

Scale points included: -3 (strongly disagree), -2 (moderately disagree), -1 (slightly disagree), 0 (neither), 1 (slightly agree), 2 (moderately agree), 3 (strongly agree); -3 (extremely bad), -2 (moderately bad), -1 (slightly bad), 0 (neither), 1 (slightly good), 2 (moderately good), 3 (extremely good).

BE product is the multiplication of the agree-disagree scale and the good-bad scale (each ranged from -3 to +3). It ranged from -9 to +9. Note: a positive score could be the result of a negative agree-disagree score (indicating unlikely the item would occur) and a negative good-bad score (indicating bad).

Table 26. Perceptions of Bias and How Well-informed Groups are on Environmental, Natural Resource, or Wildlife Management Issues, by Region.

Groups	Well-informed			Biased		
	East	West	T-Test	East	West	T-Test
Colorado Division of Wildlife	5.66	5.52	1.33	4.17	4.38	-1.52
SINAPU	4.72	4.31	2.84**	4.78	4.86	-.64
Federal Land Management Agencies	4.70	4.58	0.91	4.52	4.67	-1.22
Colorado Cattlemen's Association	3.85	4.19	-2.45*	5.21	5.01	1.39

* $p < .05$

** $p < .01$

Table 27. The Mediating Effects of Personal Importance of Wolf Reintroduction and Objective Knowledge About Wolves on the Influence of Balanced Information on General Attitudes Toward Wolf Reintroduction.

Factor	SS	df	MS	F	SigF
Main effects:					
Balanced Information about wolf reintroduction	3.139	1	3.139	0.9131	.339
Objective knowledge about wolves	116.631	2	58.316	16.969	.000
Personal importance of the wolf reintroduction issue	291.228	5	58.246	16.948	.000
Two-way interactions:					
Balanced Information by objective knowledge	1.132	2	0.566	0.156	.848
Balanced Information by personal importance	6.088	5	1.218	0.354	.880
Objective knowledge by personal importance	45.043	10	4.504	1.311	.219
Three-way interaction:					
Balanced Information by objective knowledge by personal importance	18.704	10	1.870	0.544	.859
Explained	546.490	35	15.614	4.543	.000
Residual	4739.188	1379	3.437		
Total	5285.677	1414	3.738		

Table 28. The Influence of Source Credibility on Support of/opposition to Wolf Reintroduction.

Factor	B	SE B	Wald	df	Sig Wald	R
Balanced Information about wolf reintroduction	-.146	.084	2.987	1	.184	-.025
SINAPU; well informed	.673	.053	160.073	1	.000	.321
SINAPU; biased	-.145	.058	6.272	1	.012	-.053
Colorado Cattlemen's Association; well informed	-.465	.057	65.470	1	.000	-.203
Colorado Cattlemen's Association; biased	.087	.058	2.242	1	.134	.012
Colorado Division of Wildlife; well informed	-.074	.072	1.053	1	.305	-.000
Colorado Division of Wildlife; biased	.225	.061	13.36	1	.000	.086
Federal Land Management Agencies; well informed	.172	.060	8.112	1	.004	.063
Federal Land Management Agencies; biased	-.090	.071	1.578	1	.209	-.001
Constant	-.332	.570	.340	1	.560	

Table 29. Examination of Factors Influencing Attitudes Toward Wolves.

Factor	B	SE B	Beta	T	Sig T
Stereotypes about wolves	0.229	0.019	0.244	12.284	.000
Experience with wolves	0.028	0.015	0.030	1.893	.059
Objective knowledge about wolves	0.111	0.012	0.156	9.658	.000
Symbolic existence beliefs about wolves	0.508	0.016	0.629	32.105	.000
(Constant)	1.075	0.099		10.856	.000

Table 30. The Cognitive Model of Attitudes Toward Reintroducing Wolves into Colorado.

Factor	B	SE B	Beta	T	Sig T
Attitude toward wolf reintroduction (belief-evaluation)	.289	.016	.341	18.399	.000
Attitude toward wolves	.750	.023	.597	21.184	.000
Constant	.605	.114		5.297	.000

Table 31. The Affective Model of Attitudes Toward Reintroducing Wolves into Colorado.

Factor	B	SE B	Beta	T	Sig T
Positive emotions related to wolf reintroduction	.502	.017	.465	28.677	.000
Negative emotions related to wolf reintroduction	-.418	.019	-.313	-21.586	.000
Attitude toward wolves	.357	.024	.284	15.133	.000
Constant	1.671	.114		14.654	.000

Colorado Residents' Attitudes Toward Wolf Reintroduction in Colorado

Summer 1994

**A Public Opinion Survey
conducted by**

**The Human Dimensions in Natural Resources Unit
College of Natural Resources
Colorado State University
Fort Collins, Colorado**

Section I. Attitudes and Beliefs Toward Wolves

A. We would be interested in learning what you perceive to be characteristics of wolves.

In column (a) below, list characteristics, using single adjectives or short phrases, that you feel describe wolves. ***Provide as many characteristics as necessary (any number up to 6) to convey your impression of wolves.***

In column (b) below, look at the characteristics you have given wolves and indicate whether you view that characteristic as positive, negative or neutral. ***Please circle the number that best represents your response.***

For example, you may feel a characteristic of a domestic dog is (a) "friendly" and rate it as a (b) "moderately positive" trait. ***You may use both positive and negative traits.***

EXAMPLE	Extremely <u>negative</u>	Moderately <u>negative</u>	Slightly <u>negative</u>	<u>Neutral</u>	Slightly <u>positive</u>	Moderately <u>positive</u>	Extremely <u>positive</u>
friendly	1	2	3	4	5	6	7

-----column (a)-----column (b)-----

What characteristics do you attribute to wolves?

Do you view this characteristic as positive, negative, or neutral?

	Extremely <u>negative</u>	Moderately <u>negative</u>	Slightly <u>negative</u>	<u>Neutral</u>	Slightly <u>positive</u>	Moderately <u>positive</u>	Extremely <u>positive</u>
1. _____	1	2	3	4	5	6	7
2. _____	1	2	3	4	5	6	7
3. _____	1	2	3	4	5	6	7
4. _____	1	2	3	4	5	6	7
5. _____	1	2	3	4	5	6	7
6. _____	1	2	3	4	5	6	7

B. Below are several statements about wolves. For each statement, indicate whether you believe it is "True", "False", or are "Not sure". ***Please circle your response.***

1. In areas where wolves exist near livestock, their primary food is sheep and cattle.	True	Not Sure	False
2. Wolves are in danger of becoming extinct.	True	Not Sure	False
3. In areas where wolves live in close proximity to humans, wolf attacks on humans are common.	True	Not Sure	False
4. Currently, wolves are not being considered for reintroduction in any western states.	True	Not Sure	False
5. Wolves avoid contact with humans.	True	Not Sure	False
6. Wolves are a major threat to pets in residential areas.	True	Not Sure	False
7. Wolves will kill cattle and sheep only if there are not enough deer and elk.	True	Not Sure	False
8. Wolves will not eat animals that are already dead.	True	Not Sure	False
9. Only one pair of wolves in a wolf pack breeds in any one year.	True	Not Sure	False

- | | | | |
|----------------------------------------------------------------------------|------|----------|-------|
| 10. There used to be wolves in Colorado. | True | Not Sure | False |
| 11. Timber Wolf and Gray Wolf are names for two different kinds of wolves. | True | Not Sure | False |
| 12. Wolves are only found in North America. | True | Not Sure | False |

C. Indicate the extent to which you agree, disagree, or neither agree or disagree with each of the following statements regarding how you feel about the presence of wolves in Colorado. ***Please circle the number that best represents your response.***

	<u>Strongly disagree</u>	<u>Moderately disagree</u>	<u>Slightly disagree</u>	<u>Neither</u>	<u>Slightly agree</u>	<u>Moderately agree</u>	<u>Strongly agree</u>
1. It is important that Colorado always have an abundant wolf population.	1	2	3	4	5	6	7
2. Whether or not I would get to see a wolf, it is important to me that they exist in Colorado.	1	2	3	4	5	6	7
3. We should be sure that future generations of Coloradans have an abundant wolf population.	1	2	3	4	5	6	7
4. It would be important to me to know that there are healthy populations of wolves in Colorado.	1	2	3	4	5	6	7
5. It is important to maintain wolf populations in Colorado so future generations can enjoy them.	1	2	3	4	5	6	7

D. Now we would like to know about anything that you may have ever done regarding wolves or wolf reintroduction. For each item below indicate whether you have "never" done this, done it "only once", done it "a few times", or done it "many times". ***Please circle the number that best represents your response.***

	<u>never</u>	<u>only once</u>	<u>a few times</u>	<u>many times</u>
1. read a <u>nonfictional</u> book about wolves.	0	1	2	3
2. read a <u>fictional</u> book about wolves.	0	1	2	3
3. watched TV news report(s) about wolves.	0	1	2	3
4. read newspaper/magazine article(s) about wolves.	0	1	2	3
5. watched a TV documentary about wolves.	0	1	2	3
6. discussed wolves with others.	0	1	2	3
7. read a pamphlet about wolves distributed by an environmental or conservation group.	0	1	2	3
8. listened to a presentation about wolves by an environmental or conservation group.	0	1	2	3
9. worked with an environmental or conservation group in a project that involved wolves.	0	1	2	3

E. We would also like to know any personal experiences you may have had regarding wolves. Below, in column (a), are several items that you may have experienced. In column (b), indicate whether you had or had not experienced this item ***by checking (✓) yes or no***. In column c, indicate whether this experience was positive, negative, or neutral for you. ***In column c, please circle your response only if you responded "YES" in column b.***

-----column (a)-----		-----column (c)-----						
		Was this experience positive, negative, or neutral for you?						
Experience		Extremely negative	Moderately negative	Slightly negative	Neutral	Slightly positive	Moderately positive	Extremely positive
1. saw a wolf in the wild.	Have you had this experience? ____yes ____no	1	2	3	4	5	6	7
2. heard the howl of a wolf in the wild.	____yes ____no	1	2	3	4	5	6	7
3. saw the results of wolf presence (e.g., wolf tracks, wolf kills, or wolf scat).	____yes ____no	1	2	3	4	5	6	7
4. saw a wolf in captivity.	____yes ____no	1	2	3	4	5	6	7

F. We would also like to know how you feel, in general, about wolves. ***For each of the following three questions, please circle the number that best represents your response.***

	Extremely negative	Moderately negative	Slightly negative	Neutral	Slightly positive	Moderately positive	Extremely positive
1. Would you say your general attitude toward wolves is positive, negative, or neutral?	1	2	3	4	5	6	7
	Strongly dislike	Moderately dislike	Slightly dislike	Neither	Slightly like	Moderately like	Strongly like
2. In general, do you like or dislike wolves?	1	2	3	4	5	6	7
	Extremely harmful	Moderately harmful	Slightly harmful	Neither	Slightly beneficial	Moderately beneficial	Extremely beneficial
3. In general, do you think wolves are beneficial or harmful animals?	1	2	3	4	5	6	7

Please read this page before proceeding with the rest of the questionnaire!

The Colorado Division of Wildlife is the state agency whose responsibility is to manage wildlife in Colorado. The Colorado Division of Wildlife believes that:

The current policy of the Colorado Wildlife Commission is to oppose the reintroduction of gray wolves into Colorado because of potential conflicts with livestock, human welfare, and wildlife resources. However, the policy states that should a Federal recovery plan that includes Colorado be approved, the Commission can review its policy.

Division of Wildlife biologists have several concerns about wolf reintroduction efforts, including: with limited funds, what programs would be reduced or cut as money is shifted to wolf recovery; how are the conflicts with livestock to be handled; what are the potential impacts on existing wildlife populations; do we have a sufficient habitat to support viable wolf populations; are there safety issues for people and pets; is there a potential for hybridization with free-roaming dogs; what are the attitudes of Coloradans toward wolves, especially in the area near a proposed reintroduction site; and is there a strong likelihood that wolves would be illegally killed.

Federal land management agencies have been mandated to manage threatened and endangered species through the Endangered Species Act. The following statement, written by a team of federal land management agency employees, is the position of these agencies on wolf recovery in Colorado.

Congress has directed the US Fish and Wildlife Service (FWS), to begin an evaluation of the feasibility of reintroducing Gray Wolves into Colorado. The first step is to determine if Colorado should be included in the Northern Rocky Mountains Gray Wolf Recovery Plan. Currently, this plan identifies three areas for study: 1) Central Idaho, 2) Northern Montana, and 3) Yellowstone National Park. Federal land management agencies, including the US Forest Service, Bureau of Land Management, and National Park Service are cooperating with the FWS in this evaluation.

All federal departments and agencies have an obligation to conserve and recover endangered and threatened species in furtherance of the Endangered Species Act. The agencies will carefully consider all the relevant factors and issues and will weigh the advantages and disadvantages of establishing a self-perpetuating wolf population before including Colorado in the Northern Rocky Mountains Gray Wolf Recovery Plan. The decision will be made in accordance with national Environmental Policy Act procedures which insure that environmental information is made available to public officials and citizens before decisions are made and actions taken.

SINAPU is a private, non-profit organization, whose mission is to lobby for the reintroduction of Wolves into Colorado. SINAPU believes that:

Wolves are beautiful, intelligent animals that inhabited Colorado through the entire Pleistocene era (more than a million years). They keep deer and elk herds healthy by preying on the sick and weak, and preventing thousands of them from starving to death each year. Wolves attract tourist dollars as thousands of tourists go to Minnesota every year to listen for wolves howling. Wild wolves are shy and avoid people and never attack or kill people. Wolves almost never prey on livestock. In Minnesota in 1993, almost 2,000 wolves killed only 113 cattle and 81 sheep, according to the ranchers themselves.

The government exterminated Colorado's wolves before we understood the important role wolves played in maintaining Colorado's delicate biological balance. Wolves live in Minnesota, Montana, North Carolina, and even in overcrowded Europe. There is plenty of room for wolves in Colorado. Our children deserve the right to inherit a Colorado inhabited by its native species. There is no good biological or economic reason not to reintroduce wolves to Colorado, but many great reasons to restore them.

The Colorado Cattlemen's Association is a private organization of ranchers in Colorado. The Colorado Cattlemen's Association believes that:

There are only two valid arguments for the reintroduction of wolves into areas they no longer inhabit: 1) to prevent extinction of the species, and 2) to restore a component of the "natural" biotic community. The wolf is nowhere near extinction. It is thriving in Alaska, Canada, and some lower continental locations in the United States. Reintroduction of new population is NOT necessary to prevent extinction.

Concerning the reintroduction of the wolf as a component of the "natural" biotic community, we need to evaluate the costs of reintroducing wolves into populated areas that support communities, economies, and recreation. These costs could be very great. Wolves will most certainly create economic losses to the agricultural community and may inhibit recreational activity as well. And there will be indirect social costs when wolves attack domestic pets and communities raise safety questions. Also, is it fair to thrust the burden of these costs and conflicts upon people in less populated areas simply because they can be out-voted?

It is NOT necessary to reintroduce the wolf and realize these costs because the wolf's predator role in the biotic community has been largely replaced by regulated hunting. While the idea may be romantic, reintroducing wolves cannot be justified due to very real and practical concerns.

Section II. The Issue of Wolf Reintroduction

PRIOR TO COMPLETING THE REST OF THE QUESTIONNAIRE, IT IS VERY IMPORTANT THAT YOU READ THE INFORMATION ABOUT WOLF REINTRODUCTION ON THE PREVIOUS PAGE! THANK YOU.

- A. We would like to know how you perceive the credibility of each group that provided the information you read on the previous page. For each of the groups below, indicate the extent to which you agree, disagree, or neither agree or disagree with each statement. ***Please circle the number that best represents your response.***

	<u>Strongly disagree</u>	<u>Moderately disagree</u>	<u>Slightly disagree</u>	<u>Neither</u>	<u>Slightly agree</u>	<u>Moderately agree</u>	<u>Strongly agree</u>
1. I generally think groups like SINAPU are well-informed about environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
2. I generally think groups like SINAPU have biased viewpoints toward environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
3. I generally think groups like the Colorado Cattlemen's Association are well-informed about environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
4. I generally think groups like the Colorado Cattlemen's Association have biased viewpoints toward environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
5. I generally think the Colorado Division of Wildlife is well-informed about environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
6. I generally think the Colorado Division of Wildlife has a biased viewpoint toward environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
7. I generally think the Federal Land Management Agencies are well-informed about environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
8. I generally think the Federal Land Management Agencies have biased viewpoints toward environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
	<u>Extremely bad</u>	<u>Moderately bad</u>	<u>Slightly bad</u>	<u>Neither</u>	<u>Slightly good</u>	<u>Moderately good</u>	<u>Extremely good</u>

B. Do you think reintroducing the Gray Wolf into Colorado would be good, bad, or neither? ***Please circle the number that represents your response.***

1 2 3 4 5 6 7

C. Below are several statements that represent potential outcomes to reintroducing the Gray Wolf into Colorado. Indicate the extent that you agree, disagree, or neither with each outcome statement. ***Please circle the number that best represents your response.***

	<u>Strongly disagree</u>	<u>Moderately disagree</u>	<u>Slightly disagree</u>	<u>Neither</u>	<u>Slightly agree</u>	<u>Moderately agree</u>	<u>Strongly agree</u>
1. Reintroducing wolves would result in large numbers of wolf attacks on livestock.	1	2	3	4	5	6	7
2. Reintroducing wolves would result in ranchers losing money.	1	2	3	4	5	6	7
3. Reintroducing wolves would keep deer and elk populations in balance.	1	2	3	4	5	6	7
4. Reintroducing wolves would increase tourism in Colorado.	1	2	3	4	5	6	7
5. Reintroducing wolves would result in wolf attacks on humans.	1	2	3	4	5	6	7
6. Reintroducing wolves would preserve the wolf as a wildlife species.	1	2	3	4	5	6	7
7. Reintroducing wolves would return the natural environment back to the way it once was.	1	2	3	4	5	6	7
8. Reintroducing wolves would help people understand the importance of wilderness.	1	2	3	4	5	6	7
9. Reintroducing wolves would result in wolves wandering into residential areas.	1	2	3	4	5	6	7
10. Reintroducing wolves would result in ranchers killing wolves.	1	2	3	4	5	6	7
11. Reintroducing wolves would lead to large losses in deer and elk populations.	1	2	3	4	5	6	7
12. Reintroducing wolves would lead to greater control of rodent populations.	1	2	3	4	5	6	7

D. Below, indicate whether you feel each of the following occurrences are, in general, “extremely”, “moderately”, “slightly”, or “neither” good or bad. ***Please circle the number that best represents your response.***

Extremely bad Moderately bad Slightly bad Neither Slightly good Moderately good Extremely good

1. Are large numbers of “wolf attacks on livestock” good, bad, or neither good or bad?	1	2	3	4	5	6	7
2. Is “ranchers losing money” good, bad, or neither good or bad?	1	2	3	4	5	6	7
3. Is “keeping deer and elk populations in balance” good, bad or neither good or bad?	1	2	3	4	5	6	7
4. Is “increased tourism in Colorado” good, bad, or neither good or bad?	1	2	3	4	5	6	7
5. Are “wolf attacks on humans” good, bad, or neither good or bad?	1	2	3	4	5	6	7
6. Is “preserving the wolf as a wildlife species” good, bad, or neither good or bad?	1	2	3	4	5	6	7
7. Is “returning the natural environment back to the way it once was” good, bad, or neither good or bad?	1	2	3	4	5	6	7
8. Is “helping people understand the importance of wilderness” good, bad, or neither good or bad?	1	2	3	4	5	6	7
9. Is “wolves wandering into residential areas” good, bad, or neither good or bad?	1	2	3	4	5	6	7
10. Is “ranchers killing wolves” good, bad, or neither good or bad?	1	2	3	4	5	6	7
11. Are “large losses in deer and elk populations” good, bad or neither good or bad?	1	2	3	4	5	6	7
12. Is “greater control of rodent populations” good, bad or neither good or bad?	1	2	3	4	5	6	7

E. For the following two questions, ***please circle the number that best represents your response.***

	Strongly <u>dislike</u>	Moderately <u>dislike</u>	Slightly <u>dislike</u>	<u>Neither</u>	Slightly <u>like</u>	Moderately <u>like</u>	Strongly <u>like</u>
1. Do you like or dislike the prospect of reintroducing the Gray Wolf into Colorado?	1	2	3	4	5	6	7
2. If wolves were to be reintroduced into Colorado, how close do <u>you think</u> wolves would come to your home?	less than <u>10 miles</u>	between 11 and <u>25 miles</u>	between 26 and <u>50 miles</u>	between 51 and <u>100 miles</u>	more than <u>100 miles</u>		
	1	2	3	4	5		

F. For the following three questions, respond using a scale of 0 through 6, with 0 representing "not at all important" and 6 representing "extremely important". ***Please circle the number that best represents your response.***

1. How <u>important</u> is it to you personally that you keep up to date with the issue of wolf reintroduction in Colorado?	not at all important:	0	1	2	3	4	5	6	extremely important
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1. Protecting the <u>greenback cutthroat trout</u> is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
2. Protecting the <u>river otter</u> is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
3. Protecting the <u>peregrine falcon</u> is	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
4. Protecting the <u>bald eagle</u> is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.

B. The Colorado Division of Wildlife has limited funds to conduct its activities. As a result, the reintroduction of wolves could potentially divert funds from current wildlife activities. With this in mind, indicate whether you believe each activity is “extremely”, moderately”, or “slightly” more or less important, or of the same importance, than reintroducing the Gray Wolf.

<u>Division of Wildlife Activity</u>	<u>extremely less important</u>	<u>moderately less important</u>	<u>slightly less important</u>	<u>of the same importance</u>	<u>slightly more important</u>	<u>moderately more important</u>	<u>extremely more important</u>	
1. Providing hunting opportunities is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
2. Providing fishing opportunities is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
3. Providing wildlife viewing opportunities is.	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
4. Providing wildlife education in schools is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
5. Protecting and improving wildlife habitat is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
6. Protecting endangered or threatened species that already live in Colorado is.....	1	2	3	4	5	6	7	than reintroducing the Gray wolf in Colorado.
7. Preventing other species in Colorado from becoming threatened or endangered is.....	1	2	3	4	5	6	7	than reintroducing the Gray wolf in Colorado.

Section IV. Background Information *(This information will remain confidential)*

1. What is your gender? **Please check (✓) your response.** ☐ Male ☐ Female

2. How old are you? years

3. What is you race? **Please check (✓) your response.**

☐ White, not of Hispanic origin

Hispanic origin:

☐ Black, not of Hispanic origin

☐ Mexican

☐ Native American or Alaskan Native

☐ European Spanish

_____Asian or Pacific Islander

_____Other Hispanic

_____Other (please specify)_____

4. What is the highest year of education that you completed? ***Please circle the appropriate number.***

0 1 2 3 4 5 6 7 8

{Elementary}

9 10 11 12

{High School}

13 14 15

{2-year college, technical school or some 4-year college}

16

{Finished 4-year college}

17 18 19 20 21 22

{Graduate school, Medical school, Law school, etc...}

5. What is the zip code of your current residence? _____

6. How long have you lived at your current residence? _____

7. Do you belong to any environmental or conservation groups? ***Please check (✓) your response*** _____yes _____no

a. Which ones? _____

8. How would you describe the type of community you grew up in? ***Please check (✓) your response.***

_____a farm, ranch, or rural area

_____a small city (nonsuburb) with 50,000 to 99,000 people

_____a small town (nonsuburb) with less than 10,000 people

_____a city (nonsuburb) with 100,000 to 249,000 people

_____a town (nonsuburb) with 10,000 to 24,999 people

_____a major metropolitan area with 250,000 or more people

_____a large town (nonsuburb) with 25,000 to 49,999 people

_____suburb of a major metropolitan area

Thank you very much for participating in our study!

APPENDIX A

Salient Beliefs Regarding Wolf Reintroduction

Results of the Elicitation Study

Salient Beliefs Regarding Outcomes of Reintroducing the Gray Wolf Into Colorado

Listed below are the 12 most salient beliefs about outcomes of reintroducing the wolf in Colorado based on number of times mentioned.

<u>Salient Belief</u>	<u>Number of Times Mentioned (n = 95)</u>
1. It would result in attacks on livestock.	59
2. It would help balance wildlife populations.	45
3. It would be a danger to humans.	43
4. It would help restore the natural environment.	42
5. It would result in wolves entering residential areas.	31
6. It would result in increased losses of deer and elk.	31
7. It would increase the control of rodent populations.	30
8. It would result in wolves being killed by ranchers.	30
9. It would emphasize the importance of wilderness.	18
10. It would help preserve an endangered species.	16
11. It would improve tourism in Colorado.	16
12. It would result in ranchers losing money.	13

APPENDIX B

Telephone Survey

Telephone Survey

Hello, my name is _____ from Colorado State University. Along with the United States Fish and Wildlife Service, we are conducting a study to determine the public's attitudes toward wolves in Colorado.

{If the person on the other end of the line is not obviously over 18 years old ask: Could we speak with someone in your household who is over 18 years old?"}

{If you are given to a different person, reintroduce yourself}

Would you be willing to answer two questions regarding wolves in Colorado?

{if no; end the call}

{if yes, read the following}

Currently, there are no wolves living in Colorado. The United States Fish and Wildlife Service is beginning preliminary studies to determine if wolves should be reintroduced into the state. Part of this study involves determining whether residents of Colorado would support reintroducing wolves into Colorado.

If you were given the opportunity to vote for or against reintroducing the Gray Wolf into Colorado, how would you vote?

{if for, write yes in the upper right hand corner of the sample card}

{if against, write no in the upper right hand corner of the sample card}

That is all I want to ask you right now. I would also like to mail you a questionnaire regarding more about your attitudes toward wolf reintroduction in Colorado. Since you are one of a very few people we are asking information from, your response is very important to us. Also your responses would remain confidential. Would you be willing to complete such a questionnaire and return it to us as soon as possible?

{if yes, ask for the address and write it in the blank space on the sample card - WRITE LEGIBLY!}

{if no, write no in the blank space on the sample card}

Thank you very much for your help!

APPENDIX C

Mail-back Questionnaire

Colorado Residents' Attitudes Toward Wolf Reintroduction in Colorado

Summer 1994

**A Public Opinion Survey
conducted by**

**The Human Dimensions in Natural Resources Unit
College of Natural Resources
Colorado State University
Fort Collins, Colorado**

Section I. Attitudes and Beliefs Toward Wolves

A. We would be interested in learning what you perceive to be characteristics of wolves.

In column (a) below, list characteristics, using single adjectives or short phrases, that you feel describe wolves. ***Provide as many characteristics as necessary (any number up to 6) to convey your impression of wolves.***

In column (b) below, look at the characteristics you have given wolves and indicate whether you view that characteristic as positive, negative or neutral. ***Please circle the number that best represents your response.***

For example, you may feel a characteristic of a domestic dog is (a) "friendly" and rate it is a (b) "moderately positive" trait. ***You may use both positive and negative traits.***

EXAMPLE	Extremely negative	Moderately negative	Slightly negative	Neutral	Slightly positive	Moderately positive	Extremely positive
friendly	1	2	3	4	5	6	7

-----column (a)-----

-----column (b)-----

What characteristics do you attribute to wolves?

Do you view this characteristic as positive, negative, or neutral?

	Extremely negative	Moderately negative	Slightly negative	Neutral	Slightly positive	Moderately positive	Extremely positive
1. _____	1	2	3	4	5	6	7
2. _____	1	2	3	4	5	6	7
3. _____	1	2	3	4	5	6	7
4. _____	1	2	3	4	5	6	7
5. _____	1	2	3	4	5	6	7
6. _____	1	2	3	4	5	6	7

B. Below are several statements about wolves. For each statement, indicate whether you believe it is "True", "False", or are "Not sure". ***Please circle your response.***

1. In areas where wolves exist near livestock, their primary food is sheep and cattle.	True	Not Sure	False
2. Wolves are in danger of becoming extinct.	True	Not Sure	False
3. In areas where wolves live in close proximity to humans, wolf attacks on humans are common.	True	Not Sure	False
4. Currently, wolves are not being considered for reintroduction in any western states.	True	Not Sure	False
5. Wolves avoid contact with humans.	True	Not Sure	False
6. Wolves are a major threat to pets in residential areas.	True	Not Sure	False
7. Wolves will kill cattle and sheep only if there are not enough deer and elk.	True	Not Sure	False
8. Wolves will not eat animals that are already dead.	True	Not Sure	False
9. Only one pair of wolves in a wolf pack breeds in any one year.	True	Not Sure	False

- | | | | |
|----------------------------------------------------------------------------|------|----------|-------|
| 10. There used to be wolves in Colorado. | True | Not Sure | False |
| 11. Timber Wolf and Gray Wolf are names for two different kinds of wolves. | True | Not Sure | False |
| 12. Wolves are only found in North America. | True | Not Sure | False |

C. Indicate the extent to which you agree, disagree, or neither agree or disagree with each of the following statements regarding how you feel about the presence of wolves in Colorado. ***Please circle the number that best represents your response.***

	<u>Strongly disagree</u>	<u>Moderately disagree</u>	<u>Slightly disagree</u>	<u>Neither</u>	<u>Slightly agree</u>	<u>Moderately agree</u>	<u>Strongly agree</u>
1. It is important that Colorado always have an abundant wolf population.	1	2	3	4	5	6	7
2. Whether or not I would get to see a wolf, it is important to me that they exist in Colorado.	1	2	3	4	5	6	7
3. We should be sure that future generations of Coloradans have an abundant wolf population.	1	2	3	4	5	6	7
4. It would be important to me to know that there are healthy populations of wolves in Colorado.	1	2	3	4	5	6	7
5. It is important to maintain wolf populations in Colorado so future generations can enjoy them.	1	2	3	4	5	6	7

D. Now we would like to know about anything that you may have ever done regarding wolves or wolf reintroduction. For each item below indicate whether you have "never" done this, done it "only once", done it "a few times", or done it "many times". ***Please circle the number that best represents your response.***

	<u>never</u>	<u>only once</u>	<u>a few times</u>	<u>many times</u>
1. read a <u>nonfictional</u> book about wolves.	0	1	2	3
2. read a <u>fictional</u> book about wolves.	0	1	2	3
3. watched TV news report(s) about wolves.	0	1	2	3
4. read newspaper/magazine article(s) about wolves.	0	1	2	3
5. watched a TV documentary about wolves.	0	1	2	3
6. discussed wolves with others.	0	1	2	3
7. read a pamphlet about wolves distributed by an environmental or conservation group.	0	1	2	3
8. listened to a presentation about wolves by an environmental or conservation group.	0	1	2	3
9. worked with an environmental or conservation group in a project that involved wolves.	0	1	2	3

E. We would also like to know any personal experiences you may have had regarding wolves. Below, in column (a), are several items that you may have experienced. In column (b), indicate whether you had or had not experienced this item ***by checking (✓) yes or no***. In column c, indicate whether this experience was positive, negative, or neutral for you. ***In column c, please circle your response only if you responded "YES" in column b.***

-----column (a)-----		-----column (c)-----						
		Was this experience positive, negative, or neutral for you?						
Experience		Extremely negative	Moderately negative	Slightly negative	Neutral	Slightly positive	Moderately positive	Extremely positive
1. saw a wolf in the wild.	Have you had this experience? ____yes ____no	1	2	3	4	5	6	7
2. heard the howl of a wolf in the wild.	____yes ____no	1	2	3	4	5	6	7
3. saw the results of wolf presence (e.g., wolf tracks, wolf kills, or wolf scat).	____yes ____no	1	2	3	4	5	6	7
4. saw a wolf in captivity.	____yes ____no	1	2	3	4	5	6	7

F. We would also like to know how you feel, in general, about wolves. ***For each of the following three questions, please circle the number that best represents your response.***

	Extremely negative	Moderately negative	Slightly negative	Neutral	Slightly positive	Moderately positive	Extremely positive
1. Would you say your general attitude toward wolves is positive, negative, or neutral?	1	2	3	4	5	6	7
	Strongly dislike	Moderately dislike	Slightly dislike	Neither	Slightly like	Moderately like	Strongly like
2. In general, do you like or dislike wolves?	1	2	3	4	5	6	7
	Extremely harmful	Moderately harmful	Slightly harmful	Neither	Slightly beneficial	Moderately beneficial	Extremely beneficial
3. In general, do you think wolves are beneficial or harmful animals?	1	2	3	4	5	6	7

The Colorado Division of Wildlife is the state agency whose responsibility is to manage wildlife in Colorado. The Colorado Division of Wildlife believes that:

The current policy of the Colorado Wildlife Commission is to oppose the reintroduction of gray wolves into Colorado because of potential conflicts with livestock, human welfare, and wildlife resources. However, the policy states that should a Federal recovery plan that includes Colorado be approved, the Commission can review its policy.

Division of Wildlife biologists have several concerns about wolf reintroduction efforts, including: with limited funds, what programs would be reduced or cut as money is shifted to wolf recovery; how are the conflicts with livestock to be handled; what are the potential impacts on existing wildlife populations; do we have a sufficient habitat to support viable wolf populations; are there safety issues for people and pets; is there a potential for hybridization with free-roaming dogs; what are the attitudes of Coloradans toward wolves, especially in the area near a proposed reintroduction site; and is there a strong likelihood that wolves would be illegally killed.

Federal land management agencies have been mandated to manage threatened and endangered species through the Endangered Species Act. The following statement, written by a team of federal land management agency employees, is the position of these agencies on wolf recovery in Colorado.

Congress has directed the US Fish and Wildlife Service (FWS), to begin an evaluation of the feasibility of reintroducing Gray Wolves into Colorado. The first step is to determine if Colorado should be included in the Northern Rocky Mountains Gray Wolf Recovery Plan. Currently, this plan identifies three areas for study: 1) Central Idaho, 2) Northern Montana, and 3) Yellowstone National Park. Federal land management agencies, including the US Forest Service, Bureau of Land Management, and National Park Service are cooperating with the FWS in this evaluation.

All federal departments and agencies have an obligation to conserve and recover endangered and threatened species in furtherance of the Endangered Species Act. The agencies will carefully consider all the relevant factors and issues and will weigh the advantages and disadvantages of establishing a self-perpetuating wolf population before including Colorado in the Northern Rocky Mountains Gray Wolf Recovery Plan. The decision will be made in accordance with national Environmental Policy Act procedures which insure that environmental information is made available to public officials and citizens before decisions are made and actions taken.

SINAPU is a private, non-profit organization, whose mission is to lobby for the reintroduction of Wolves into Colorado. SINAPU believes that:

Wolves are beautiful, intelligent animals that inhabited Colorado through the entire Pleistocene era (more than a million years). They keep deer and elk herds healthy by preying on the sick and weak, and preventing thousands of them from starving to death each year. Wolves attract tourist dollars as thousands of tourists go to Minnesota every year to listen for wolves howling. Wild wolves are shy and avoid people and never attack or kill people. Wolves almost never prey on livestock. In Minnesota in 1993, almost 2,000 wolves killed only 113 cattle and 81 sheep, according to the ranchers themselves.

The government exterminate Colorado's wolves before we understood the important role wolves played in maintaining Colorado's delicate biological balance. Wolves live in Minnesota, Montana, North Carolina, and even in overcrowded Europe. There is plenty of room for wolves in Colorado. Our children deserve the right to inherit a Colorado inhabited by its native species. There is no good biological or economic reason not to reintroduce wolves to Colorado, but many great reasons to restore them.

The Colorado Cattlemen's Association is a private organization of ranchers in Colorado. The Colorado Cattlemen's Association believes that:

There are only two valid arguments for the reintroduction of wolves into areas they no longer inhabit: 1) to prevent extinction of the species, and 2) to restore a component of the "natural" biotic community. The wolf is nowhere near extinction. It is thriving in Alaska, Canada, and some lower continental locations in the United States. Reintroduction of new population is NOT necessary to prevent extinction.

Concerning the reintroduction of the wolf as a component of the "natural" biotic community, we need to evaluate the costs of reintroducing wolves into populated areas that support communities, economies, and recreation. These costs could be very great. Wolves will most certainly create economic losses to the agricultural community and may inhibit recreational activity as well. And there will be indirect social costs when wolves attack domestic pets and communities raise safety questions. Also, is it fair to thrust the burden of these costs and conflicts upon people in less populated areas simply because they can be out-voted?

It is NOT necessary to reintroduce the wolf and realize these costs because the wolf's predator role in the biotic community has been largely replaced by regulated hunting. While the idea may be romantic, reintroducing wolves cannot be justified due to very real and practical concerns.

Section II. The Issue of Wolf Reintroduction

PRIOR TO COMPLETING THE REST OF THE QUESTIONNAIRE, IT IS VERY IMPORTANT THAT YOU READ THE INFORMATION ABOUT WOLF REINTRODUCTION ON THE PREVIOUS PAGE! THANK YOU.

- A. We would like to know how you perceive the credibility of each group that provided the information you read on the previous page. For each of the groups below, indicate the extent to which you agree, disagree, or neither agree or disagree with each statement. ***Please circle the number that best represents your response.***

	<u>Strongly disagree</u>	<u>Moderately disagree</u>	<u>Slightly disagree</u>	<u>Neither</u>	<u>Slightly agree</u>	<u>Moderately agree</u>	<u>Strongly agree</u>
1. I generally think groups like SINAPU are well-informed about environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
2. I generally think groups like SINAPU have biased viewpoints toward environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
3. I generally think groups like the Colorado Cattlemen's Association are well-informed about environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
4. I generally think groups like the Colorado Cattlemen's Association have biased viewpoints toward environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
5. I generally think the Colorado Division of Wildlife is well-informed about environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
6. I generally think the Colorado Division of Wildlife has a biased viewpoint toward environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
7. I generally think the Federal Land Management Agencies are well-informed about environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
8. I generally think the Federal Land Management Agencies have biased viewpoints toward environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
	<u>Extremely bad</u>	<u>Moderately bad</u>	<u>Slightly bad</u>	<u>Neither</u>	<u>Slightly good</u>	<u>Moderately good</u>	<u>Extremely good</u>

B. Do you think reintroducing the Gray Wolf into Colorado would be good, bad, or neither? ***Please circle the number that represents your response.***

1 2 3 4 5 6 7

C. Below are several statements that represent potential outcomes to reintroducing the Gray Wolf into Colorado. Indicate the extent that you agree, disagree, or neither with each outcome statement. ***Please circle the number that best represents your response.***

	<u>Strongly disagree</u>	<u>Moderately disagree</u>	<u>Slightly disagree</u>	<u>Neither</u>	<u>Slightly agree</u>	<u>Moderately agree</u>	<u>Strongly agree</u>
1. Reintroducing wolves would result in large numbers of wolf attacks on livestock.	1	2	3	4	5	6	7
2. Reintroducing wolves would result in ranchers losing money.	1	2	3	4	5	6	7
3. Reintroducing wolves would keep deer and elk populations in balance.	1	2	3	4	5	6	7
4. Reintroducing wolves would increase tourism in Colorado.	1	2	3	4	5	6	7
5. Reintroducing wolves would result in wolf attacks on humans.	1	2	3	4	5	6	7
6. Reintroducing wolves would preserve the wolf as a wildlife species.	1	2	3	4	5	6	7
7. Reintroducing wolves would return the natural environment back to the way it once was.	1	2	3	4	5	6	7
8. Reintroducing wolves would help people understand the importance of wilderness.	1	2	3	4	5	6	7
9. Reintroducing wolves would result in wolves wandering into residential areas.	1	2	3	4	5	6	7
10. Reintroducing wolves would result in ranchers killing wolves.	1	2	3	4	5	6	7
11. Reintroducing wolves would lead to large losses in deer and elk populations.	1	2	3	4	5	6	7
12. Reintroducing wolves would lead to greater control of rodent populations.	1	2	3	4	5	6	7

D. Below, indicate whether you feel each of the following occurrences are, in general, “extremely”, “moderately”, “slightly”, or “neither” good or bad. ***Please circle the number that best represents your response.***

Extremely bad Moderately bad Slightly bad Neither Slightly good Moderately good Extremely good

1. Are large numbers of “wolf attacks on livestock” good, bad, or neither good or bad?	1	2	3	4	5	6	7
2. Is “ranchers losing money” good, bad, or neither good or bad?	1	2	3	4	5	6	7
3. Is “keeping deer and elk populations in balance” good, bad or neither good or bad?	1	2	3	4	5	6	7
4. Is “increased tourism in Colorado” good, bad, or neither good or bad?	1	2	3	4	5	6	7
5. Are “wolf attacks on humans” good, bad, or neither good or bad?	1	2	3	4	5	6	7
6. Is “preserving the wolf as a wildlife species” good, bad, or neither good or bad?	1	2	3	4	5	6	7
7. Is “returning the natural environment back to the way it once was” good, bad, or neither good or bad?	1	2	3	4	5	6	7
8. Is “helping people understand the importance of wilderness” good, bad, or neither good or bad?	1	2	3	4	5	6	7
9. Is “wolves wandering into residential areas” good, bad, or neither good or bad?	1	2	3	4	5	6	7
10. Is “ranchers killing wolves” good, bad, or neither good or bad?	1	2	3	4	5	6	7
11. Are “large losses in deer and elk populations” good, bad or neither good or bad?	1	2	3	4	5	6	7
12. Is “greater control of rodent populations” good, bad or neither good or bad?	1	2	3	4	5	6	7

E. For the following two questions, ***please circle the number that best represents your response.***

	Strongly <u>dislike</u>	Moderately <u>dislike</u>	Slightly <u>dislike</u>	<u>Neither</u>	Slightly <u>like</u>	Moderately <u>like</u>	Strongly <u>like</u>
1. Do you like or dislike the prospect of reintroducing the Gray Wolf into Colorado?	1	2	3	4	5	6	7
	<u>less than 10 miles</u>	<u>between 11 and 25 miles</u>	<u>between 26 and 50 miles</u>	<u>between 51 and 100 miles</u>	<u>more than 100 miles</u>		
2. If wolves were to be reintroduced into Colorado, how close do <u>you think</u> wolves would come to your home?	1	2	3	4	5		

F. For the following three questions, respond using a scale of 0 through 6, with 0 representing "not at all important" and 6 representing "extremely important". ***Please circle the number that best represents your response.***

1. How <u>important</u> is it to you personally that you keep up to date with the issue of wolf reintroduction in Colorado?	not at all important:	0	1	2	3	4	5	6	extremely important
------------------------------------------------------------------------------------------------------------------------------------	--------------------------	---	---	---	---	---	---	---	------------------------

- | | <u>Strongly
disapprove</u> | <u>Moderately
disapprove</u> | <u>Slightly
disapprove</u> | <u>Neither</u> | <u>Slightly
approve</u> | <u>Moderately
approve</u> | <u>Strongly
approve</u> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------|--------------------------------|----------------|-----------------------------|-------------------------------|-----------------------------|
| G. Do you approve, disapprove, or neither of reintroducing the Gray Wolf into Colorado?
<i>Please circle the number that best represents your response.</i> | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

1. happy	not at all:	0	1	2	3	4	5	6	:extremely
2. fearful	not at all:	0	1	2	3	4	5	6	:extremely
3. surprised	not at all:	0	1	2	3	4	5	6	:extremely
4. angry	not at all:	0	1	2	3	4	5	6	:extremely
5. interested	not at all:	0	1	2	3	4	5	6	:extremely
6. disgusted	not at all:	0	1	2	3	4	5	6	:extremely
7. sad	not at all:	0	1	2	3	4	5	6	:extremely
8. agreeable	not at all:	0	1	2	3	4	5	6	:extremely

I would vote **against** reintroducing the Gray Wolf

- ### Section III. Wildlife Management Programs

95

1. Protecting the <u>greenback cutthroat trout</u> is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
2. Protecting <u>the river otter</u> is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
3. Protecting the <u>peregrine falcon</u> is	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
4. Protecting <u>the bald eagle</u> is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.

B. The Colorado Division of Wildlife has limited funds to conduct its activities. As a result, the reintroduction of wolves could potentially divert funds from current wildlife activities. With this in mind, indicate whether you believe each activity is “extremely”, moderately”, or “slightly” more or less important, or of the same importance, than reintroducing the Gray Wolf.

<u>Division of Wildlife Activity</u>	<u>extremely less important</u>	<u>moderately less important</u>	<u>slightly less important</u>	<u>of the same importance</u>	<u>slightly more important</u>	<u>moderately more important</u>	<u>extremely more important</u>	
1. Providing hunting opportunities is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
2. Providing fishing opportunities is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
3. Providing wildlife viewing opportunities is.	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
4. Providing wildlife education in schools is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
5. Protecting and improving wildlife habitat is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
6. Protecting endangered or threatened species that already live in Colorado is.....	1	2	3	4	5	6	7	than reintroducing the Gray wolf in Colorado.
7. Preventing other species in Colorado from becoming threatened or endangered is.....	1	2	3	4	5	6	7	than reintroducing the Gray wolf in Colorado.

Section IV. Background Information *(This information will remain confidential)*

1. What is your gender? **Please check (✓) your response.** ☐ Male ☐ Female

2. How old are you? years

3. What is you race? **Please check (✓) your response.**

☐ White, not of Hispanic origin

Hispanic origin:

☐ Black, not of Hispanic origin

☐ Mexican

☐ Native American or Alaskan Native

☐ European Spanish

_____Asian or Pacific Islander

_____Other Hispanic

_____Other (please specify)_____

4. What is the highest year of education that you completed? ***Please circle the appropriate number.***

0 1 2 3 4 5 6 7 8

{Elementary}

9 10 11 12

{High School}

13 14 15

{2-year college, technical school or some 4-year college}

16

{Finished 4-year college}

17 18 19 20 21 22

{Graduate school, Medical school, Law school, etc...}

5. What is the zip code of your current residence? _____

6. How long have you lived at your current residence? _____

7. Do you belong to any environmental or conservation groups? ***Please check (✓) your response*** _____yes _____no

a. Which ones? _____

8. How would you describe the type of community you grew up in? ***Please check (✓) your response.***

_____a farm, ranch, or rural area

_____a small city (nonsuburb) with 50,000 to 99,000 people

_____a small town (nonsuburb) with less than 10,000 people

_____a city (nonsuburb) with 100,000 to 249,000 people

_____a town (nonsuburb) with 10,000 to 24,999 people

_____a major metropolitan area with 250,000 or more people

_____a large town (nonsuburb) with 25,000 to 49,999 people

_____suburb of a major metropolitan area

Thank you very much for participating in our study!

APPENDIX D

East Slope and West Slope Colorado Counties

East Slope Counties

Adams
Arapahoe
Baca
Bent
Boulder
Cheyenne
Crowley
Denver
Douglas
El Paso
Elbert
Huerfano
Jefferson
Kiowa
Kit Carson
Larimer
Las Animas
Lincoln
Logan
Morgan
Otero
Phillips
Prowers
Pueblo
Sedgwick
Washington
Yuma
Weld

West Slope Counties

Alamosa
Archuleta
Chaffee
Clear Creek
Conejos
Costilla
Custer
Dolores
Delta
Eagle
Fremont
Garfield
Gilpin
Grand
Gunnison
Hinsdale
Jackson
La Plata
Lake
Mesa
Mineral
Moffat
Montezuma
Montrose
Ouray
Park
Pitkin
Rio Blanco
Rio Grande
Routt
Saguache
San Juan
San Miguel
Summit
Teller

APPENDIX A

Salient Beliefs Regarding Wolf Reintroduction

Results of the Elicitation Study

Salient Beliefs Regarding Outcomes of Reintroducing the Gray Wolf Into Colorado

Listed below are the 12 most salient beliefs about outcomes of reintroducing the wolf in Colorado based on number of times mentioned.

<u>Salient Belief</u>	<u>Number of Times Mentioned (n = 95)</u>
1. It would result in attacks on livestock.	59
2. It would help balance wildlife populations.	45
3. It would be a danger to humans.	43
4. It would help restore the natural environment.	42
5. It would result in wolves entering residential areas.	31
6. It would result in increased losses of deer and elk.	31
7. It would increase the control of rodent populations.	30
8. It would result in wolves being killed by ranchers.	30
9. It would emphasize the importance of wilderness.	18
10. It would help preserve an endangered species.	16
11. It would improve tourism in Colorado.	16
12. It would result in ranchers losing money.	13

APPENDIX B

Telephone Survey

Telephone Survey

Hello, my name is _____ from Colorado State University. Along with the United States Fish and Wildlife Service, we are conducting a study to determine the public's attitudes toward wolves in Colorado.

{If the person on the other end of the line is not obviously over 18 years old ask: Could we speak with someone in your household who is over 18 years old?"}

{If you are given to a different person, reintroduce yourself}

Would you be willing to answer two questions regarding wolves in Colorado?

{if no; end the call}

{if yes, read the following}

Currently, there are no wolves living in Colorado. The United States Fish and Wildlife Service is beginning preliminary studies to determine if wolves should be reintroduced into the state. Part of this study involves determining whether residents of Colorado would support reintroducing wolves into Colorado.

If you were given the opportunity to vote for or against reintroducing the Gray Wolf into Colorado, how would you vote?

{if for, write yes in the upper right hand corner of the sample card}

{if against, write no in the upper right hand corner of the sample card}

That is all I want to ask you right now. I would also like to mail you a questionnaire regarding more about your attitudes toward wolf reintroduction in Colorado. Since you are one of a very few people we are asking information from, your response is very important to us. Also your responses would remain confidential. Would you be willing to complete such a questionnaire and return it to us as soon as possible?

{if yes, ask for the address and write it in the blank space on the sample card - WRITE LEGIBLY!}

{if no, write no in the blank space on the sample card}

Thank you very much for your help!

APPENDIX C

Mail-back Questionnaire

Colorado Residents' Attitudes Toward Wolf Reintroduction in Colorado

Summer 1994

**A Public Opinion Survey
conducted by**

**The Human Dimensions in Natural Resources Unit
College of Natural Resources
Colorado State University
Fort Collins, Colorado**

Section I. Attitudes and Beliefs Toward Wolves

A. We would be interested in learning what you perceive to be characteristics of wolves.

In column (a) below, list characteristics, using single adjectives or short phrases, that you feel describe wolves. ***Provide as many characteristics as necessary (any number up to 6) to convey your impression of wolves.***

In column (b) below, look at the characteristics you have given wolves and indicate whether you view that characteristic as positive, negative or neutral. ***Please circle the number that best represents your response.***

For example, you may feel a characteristic of a domestic dog is (a) "friendly" and rate it is a (b) "moderately positive" trait. ***You may use both positive and negative traits.***

EXAMPLE	Extremely negative	Moderately negative	Slightly negative	Neutral	Slightly positive	Moderately positive	Extremely positive
friendly	1	2	3	4	5	6	7

-----column (a)-----

-----column (b)-----

What characteristics do you attribute to wolves?

Do you view this characteristic as positive, negative, or neutral?

	Extremely negative	Moderately negative	Slightly negative	Neutral	Slightly positive	Moderately positive	Extremely positive
1. _____	1	2	3	4	5	6	7
2. _____	1	2	3	4	5	6	7
3. _____	1	2	3	4	5	6	7
4. _____	1	2	3	4	5	6	7
5. _____	1	2	3	4	5	6	7
6. _____	1	2	3	4	5	6	7

B. Below are several statements about wolves. For each statement, indicate whether you believe it is "True", "False", or are "Not sure". ***Please circle your response.***

1. In areas where wolves exist near livestock, their primary food is sheep and cattle.	True	Not Sure	False
2. Wolves are in danger of becoming extinct.	True	Not Sure	False
3. In areas where wolves live in close proximity to humans, wolf attacks on humans are common.	True	Not Sure	False
4. Currently, wolves are not being considered for reintroduction in any western states.	True	Not Sure	False
5. Wolves avoid contact with humans.	True	Not Sure	False
6. Wolves are a major threat to pets in residential areas.	True	Not Sure	False
7. Wolves will kill cattle and sheep only if there are not enough deer and elk.	True	Not Sure	False
8. Wolves will not eat animals that are already dead.	True	Not Sure	False
9. Only one pair of wolves in a wolf pack breeds in any one year.	True	Not Sure	False

- | | | | |
|----------------------------------------------------------------------------|------|----------|-------|
| 10. There used to be wolves in Colorado. | True | Not Sure | False |
| 11. Timber Wolf and Gray Wolf are names for two different kinds of wolves. | True | Not Sure | False |
| 12. Wolves are only found in North America. | True | Not Sure | False |

C. Indicate the extent to which you agree, disagree, or neither agree or disagree with each of the following statements regarding how you feel about the presence of wolves in Colorado. ***Please circle the number that best represents your response.***

	<u>Strongly disagree</u>	<u>Moderately disagree</u>	<u>Slightly disagree</u>	<u>Neither</u>	<u>Slightly agree</u>	<u>Moderately agree</u>	<u>Strongly agree</u>
1. It is important that Colorado always have an abundant wolf population.	1	2	3	4	5	6	7
2. Whether or not I would get to see a wolf, it is important to me that they exist in Colorado.	1	2	3	4	5	6	7
3. We should be sure that future generations of Coloradans have an abundant wolf population.	1	2	3	4	5	6	7
4. It would be important to me to know that there are healthy populations of wolves in Colorado.	1	2	3	4	5	6	7
5. It is important to maintain wolf populations in Colorado so future generations can enjoy them.	1	2	3	4	5	6	7

D. Now we would like to know about anything that you may have ever done regarding wolves or wolf reintroduction. For each item below indicate whether you have "never" done this, done it "only once", done it "a few times", or done it "many times". ***Please circle the number that best represents your response.***

	<u>never</u>	<u>only once</u>	<u>a few times</u>	<u>many times</u>
1. read a <u>nonfictional</u> book about wolves.	0	1	2	3
2. read a <u>fictional</u> book about wolves.	0	1	2	3
3. watched TV news report(s) about wolves.	0	1	2	3
4. read newspaper/magazine article(s) about wolves.	0	1	2	3
5. watched a TV documentary about wolves.	0	1	2	3
6. discussed wolves with others.	0	1	2	3
7. read a pamphlet about wolves distributed by an environmental or conservation group.	0	1	2	3
8. listened to a presentation about wolves by an environmental or conservation group.	0	1	2	3
9. worked with an environmental or conservation group in a project that involved wolves.	0	1	2	3

E. We would also like to know any personal experiences you may have had regarding wolves. Below, in column (a), are several items that you may have experienced. In column (b), indicate whether you had or had not experienced this item ***by checking (✓) yes or no***. In column c, indicate whether this experience was positive, negative, or neutral for you. ***In column c, please circle your response only if you responded "YES" in column b.***

-----column (a)-----		-----column (c)-----						
		<u>Was this experience positive, negative, or neutral for you?</u>						
<u>Experience</u>	Have you had this experience?	<u>Extremely negative</u>	<u>Moderately negative</u>	<u>Slightly negative</u>	<u>Neutral</u>	<u>Slightly positive</u>	<u>Moderately positive</u>	<u>Extremely positive</u>
1. saw a wolf in the wild.	___yes ___no	1	2	3	4	5	6	7
2. heard the howl of a wolf in the wild.	___yes ___no	1	2	3	4	5	6	7
3. saw the results of wolf presence (e.g., wolf tracks, wolf kills, or wolf scat).	___yes ___no	1	2	3	4	5	6	7
4. saw a wolf in captivity.	___yes ___no	1	2	3	4	5	6	7

F. We would also like to know how you feel, in general, about wolves. ***For each of the following three questions, please circle the number that best represents your response.***

	<u>Extremely negative</u>	<u>Moderately negative</u>	<u>Slightly negative</u>	<u>Neutral</u>	<u>Slightly positive</u>	<u>Moderately positive</u>	<u>Extremely positive</u>
1. Would you say your general attitude toward wolves is positive, negative, or neutral?	1	2	3	4	5	6	7
	<u>Strongly dislike</u>	<u>Moderately dislike</u>	<u>Slightly dislike</u>	<u>Neither</u>	<u>Slightly like</u>	<u>Moderately like</u>	<u>Strongly like</u>
2. In general, do you like or dislike wolves?	1	2	3	4	5	6	7
	<u>Extremely harmful</u>	<u>Moderately harmful</u>	<u>Slightly harmful</u>	<u>Neither</u>	<u>Slightly beneficial</u>	<u>Moderately beneficial</u>	<u>Extremely beneficial</u>
3. In general, do you think wolves are beneficial or harmful animals?	1	2	3	4	5	6	7

The Colorado Division of Wildlife is the state agency whose responsibility is to manage wildlife in Colorado. The Colorado Division of Wildlife believes that:

The current policy of the Colorado Wildlife Commission is to oppose the reintroduction of gray wolves into Colorado because of potential conflicts with livestock, human welfare, and wildlife resources. However, the policy states that should a Federal recovery plan that includes Colorado be approved, the Commission can review its policy.

Division of Wildlife biologists have several concerns about wolf reintroduction efforts, including: with limited funds, what programs would be reduced or cut as money is shifted to wolf recovery; how are the conflicts with livestock to be handled; what are the potential impacts on existing wildlife populations; do we have a sufficient habitat to support viable wolf populations; are there safety issues for people and pets; is there a potential for hybridization with free-roaming dogs; what are the attitudes of Coloradans toward wolves, especially in the area near a proposed reintroduction site; and is there a strong likelihood that wolves would be illegally killed.

Federal land management agencies have been mandated to manage threatened and endangered species through the Endangered Species Act. The following statement, written by a team of federal land management agency employees, is the position of these agencies on wolf recovery in Colorado.

Congress has directed the US Fish and Wildlife Service (FWS), to begin an evaluation of the feasibility of reintroducing Gray Wolves into Colorado. The first step is to determine if Colorado should be included in the Northern Rocky Mountains Gray Wolf Recovery Plan. Currently, this plan identifies three areas for study: 1) Central Idaho, 2) Northern Montana, and 3) Yellowstone National Park. Federal land management agencies, including the US Forest Service, Bureau of Land Management, and National Park Service are cooperating with the FWS in this evaluation.

All federal departments and agencies have an obligation to conserve and recover endangered and threatened species in furtherance of the Endangered Species Act. The agencies will carefully consider all the relevant factors and issues and will weigh the advantages and disadvantages of establishing a self-perpetuating wolf population before including Colorado in the Northern Rocky Mountains Gray Wolf Recovery Plan. The decision will be made in accordance with national Environmental Policy Act procedures which insure that environmental information is made available to public officials and citizens before decisions are made and actions taken.

SINAPU is a private, non-profit organization, whose mission is to lobby for the reintroduction of Wolves into Colorado. SINAPU believes that:

Wolves are beautiful, intelligent animals that inhabited Colorado through the entire Pleistocene era (more than a million years). They keep deer and elk herds healthy by preying on the sick and weak, and preventing thousands of them from starving to death each year. Wolves attract tourist dollars as thousands of tourists go to Minnesota every year to listen for wolves howling. Wild wolves are shy and avoid people and never attack or kill people. Wolves almost never prey on livestock. In Minnesota in 1993, almost 2,000 wolves killed only 113 cattle and 81 sheep, according to the ranchers themselves.

The government exterminate Colorado's wolves before we understood the important role wolves played in maintaining Colorado's delicate biological balance. Wolves live in Minnesota, Montana, North Carolina, and even in overcrowded Europe. There is plenty of room for wolves in Colorado. Our children deserve the right to inherit a Colorado inhabited by its native species. There is no good biological or economic reason not to reintroduce wolves to Colorado, but many great reasons to restore them.

The Colorado Cattlemen's Association is a private organization of ranchers in Colorado. The Colorado Cattlemen's Association believes that:

There are only two valid arguments for the reintroduction of wolves into areas they no longer inhabit: 1) to prevent extinction of the species, and 2) to restore a component of the "natural" biotic community. The wolf is nowhere near extinction. It is thriving in Alaska, Canada, and some lower continental locations in the United States. Reintroduction of new population is NOT necessary to prevent extinction.

Concerning the reintroduction of the wolf as a component of the "natural" biotic community, we need to evaluate the costs of reintroducing wolves into populated areas that support communities, economies, and recreation. These costs could be very great. Wolves will most certainly create economic losses to the agricultural community and may inhibit recreational activity as well. And there will be indirect social costs when wolves attack domestic pets and communities raise safety questions. Also, is it fair to thrust the burden of these costs and conflicts upon people in less populated areas simply because they can be out-voted?

It is NOT necessary to reintroduce the wolf and realize these costs because the wolf's predator role in the biotic community has been largely replaced by regulated hunting. While the idea may be romantic, reintroducing wolves cannot be justified due to very real and practical concerns.

Section II. The Issue of Wolf Reintroduction

PRIOR TO COMPLETING THE REST OF THE QUESTIONNAIRE, IT IS VERY IMPORTANT THAT YOU READ THE INFORMATION ABOUT WOLF REINTRODUCTION ON THE PREVIOUS PAGE! THANK YOU.

- A. We would like to know how you perceive the credibility of each group that provided the information you read on the previous page. For each of the groups below, indicate the extent to which you agree, disagree, or neither agree or disagree with each statement. ***Please circle the number that best represents your response.***

	<u>Strongly disagree</u>	<u>Moderately disagree</u>	<u>Slightly disagree</u>	<u>Neither</u>	<u>Slightly agree</u>	<u>Moderately agree</u>	<u>Strongly agree</u>
1. I generally think groups like SINAPU are well-informed about environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
2. I generally think groups like SINAPU have biased viewpoints toward environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
3. I generally think groups like the Colorado Cattlemen's Association are well-informed about environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
4. I generally think groups like the Colorado Cattlemen's Association have biased viewpoints toward environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
5. I generally think the Colorado Division of Wildlife is well-informed about environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
6. I generally think the Colorado Division of Wildlife has a biased viewpoint toward environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
7. I generally think the Federal Land Management Agencies are well-informed about environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
8. I generally think the Federal Land Management Agencies have biased viewpoints toward environmental, natural resource, or wildlife management issues.	1	2	3	4	5	6	7
	<u>Extremely bad</u>	<u>Moderately bad</u>	<u>Slightly bad</u>	<u>Neither</u>	<u>Slightly good</u>	<u>Moderately good</u>	<u>Extremely good</u>

B. Do you think reintroducing the Gray Wolf into Colorado would be good, bad, or neither? ***Please circle the number that represents your response.***

1 2 3 4 5 6 7

C. Below are several statements that represent potential outcomes to reintroducing the Gray Wolf into Colorado. Indicate the extent that you agree, disagree, or neither with each outcome statement. ***Please circle the number that best represents your response.***

	<u>Strongly disagree</u>	<u>Moderately disagree</u>	<u>Slightly disagree</u>	<u>Neither</u>	<u>Slightly agree</u>	<u>Moderately agree</u>	<u>Strongly agree</u>
1. Reintroducing wolves would result in large numbers of wolf attacks on livestock.	1	2	3	4	5	6	7
2. Reintroducing wolves would result in ranchers losing money.	1	2	3	4	5	6	7
3. Reintroducing wolves would keep deer and elk populations in balance.	1	2	3	4	5	6	7
4. Reintroducing wolves would increase tourism in Colorado.	1	2	3	4	5	6	7
5. Reintroducing wolves would result in wolf attacks on humans.	1	2	3	4	5	6	7
6. Reintroducing wolves would preserve the wolf as a wildlife species.	1	2	3	4	5	6	7
7. Reintroducing wolves would return the natural environment back to the way it once was.	1	2	3	4	5	6	7
8. Reintroducing wolves would help people understand the importance of wilderness.	1	2	3	4	5	6	7
9. Reintroducing wolves would result in wolves wandering into residential areas.	1	2	3	4	5	6	7
10. Reintroducing wolves would result in ranchers killing wolves.	1	2	3	4	5	6	7
11. Reintroducing wolves would lead to large losses in deer and elk populations.	1	2	3	4	5	6	7
12. Reintroducing wolves would lead to greater control of rodent populations.	1	2	3	4	5	6	7

D. Below, indicate whether you feel each of the following occurrences are, in general, “extremely”, “moderately”, “slightly”, or “neither” good or bad. ***Please circle the number that best represents your response.***

Extremely bad Moderately bad Slightly bad Neither Slightly good Moderately good Extremely good

1. Are large numbers of “wolf attacks on livestock” good, bad, or neither good or bad?	1	2	3	4	5	6	7
2. Is “ranchers losing money” good, bad, or neither good or bad?	1	2	3	4	5	6	7
3. Is “keeping deer and elk populations in balance” good, bad or neither good or bad?	1	2	3	4	5	6	7
4. Is “increased tourism in Colorado” good, bad, or neither good or bad?	1	2	3	4	5	6	7
5. Are “wolf attacks on humans” good, bad, or neither good or bad?	1	2	3	4	5	6	7
6. Is “preserving the wolf as a wildlife species” good, bad, or neither good or bad?	1	2	3	4	5	6	7
7. Is “returning the natural environment back to the way it once was” good, bad, or neither good or bad?	1	2	3	4	5	6	7
8. Is “helping people understand the importance of wilderness” good, bad, or neither good or bad?	1	2	3	4	5	6	7
9. Is “wolves wandering into residential areas” good, bad, or neither good or bad?	1	2	3	4	5	6	7
10. Is “ranchers killing wolves” good, bad, or neither good or bad?	1	2	3	4	5	6	7
11. Are “large losses in deer and elk populations” good, bad or neither good or bad?	1	2	3	4	5	6	7
12. Is “greater control of rodent populations” good, bad or neither good or bad?	1	2	3	4	5	6	7

E. For the following two questions, ***please circle the number that best represents your response.***

	Strongly <u>dislike</u>	Moderately <u>dislike</u>	Slightly <u>dislike</u>	<u>Neither</u>	Slightly <u>like</u>	Moderately <u>like</u>	Strongly <u>like</u>
1. Do you like or dislike the prospect of reintroducing the Gray Wolf into Colorado?	1	2	3	4	5	6	7
	<u>less than 10 miles</u>	<u>between 11 and 25 miles</u>	<u>between 26 and 50 miles</u>		<u>between 51 and 100 miles</u>		<u>more than 100 miles</u>
2. If wolves were to be reintroduced into Colorado, how close do <u>you think</u> wolves would come to your home?	1	2	3		4		5

F. For the following three questions, respond using a scale of 0 through 6, with 0 representing "not at all important" and 6 representing "extremely important". ***Please circle the number that best represents your response.***

1. How <u>important</u> is it to you personally that you keep up to date with the issue of wolf reintroduction in Colorado?	not at all important:	0	1	2	3	4	5	6	extremely important
------------------------------------------------------------------------------------------------------------------------------------	--------------------------	---	---	---	---	---	---	---	------------------------

2. How important is it **to you personally** that the final decision regarding whether wolves are reintroduced in Colorado is the same as what you think the decision should be?
- | | | | | | | | | |
|--------------------------|---|---|---|---|---|---|---|------------------------|
| not at all
important: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | extremely
important |
|--------------------------|---|---|---|---|---|---|---|------------------------|
3. How important is the issue of wolf reintroduction in Colorado **to you personally**?
- | | | | | | | | | |
|--------------------------|---|---|---|---|---|---|---|------------------------|
| not at all
important: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | extremely
important |
|--------------------------|---|---|---|---|---|---|---|------------------------|

- G. Do you approve, disapprove, or neither of reintroducing the Gray Wolf into Colorado?
Please circle the number that best represents your response.
- | | | | | | | |
|------------------------|--------------------------|------------------------|---------|---------------------|-----------------------|---------------------|
| Strongly
disapprove | Moderately
disapprove | Slightly
disapprove | Neither | Slightly
approve | Moderately
approve | Strongly
approve |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

- H. Often, individuals experience certain feelings when they think about a certain issue. On a scale of 0 through 6, with 0 being "not at all" and 6 being "extremely", how strongly do you feel each emotion when you think about the prospect of the Gray Wolf being reintroduced into Colorado. **Please circle the number that best represents your response.**

- | | | | | | | | | | |
|---------------|-------------|---|---|---|---|---|---|---|------------|
| 1. happy | not at all: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | :extremely |
| 2. fearful | not at all: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | :extremely |
| 3. surprised | not at all: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | :extremely |
| 4. angry | not at all: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | :extremely |
| 5. interested | not at all: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | :extremely |
| 6. disgusted | not at all: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | :extremely |
| 7. sad | not at all: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | :extremely |
| 8. agreeable | not at all: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | :extremely |

- I. If you were given the opportunity to vote **for** or **against** reintroducing the Gray Wolf into Colorado, how would you vote? **Please check(✓) your response.**

____ I would vote **for** reintroducing the Gray Wolf

____ I would vote **against** reintroducing the Gray Wolf

- a. How **certain** are you that you would vote that way? **Please circle the number that best represents your response.**

not at all certain:	0	1	2	3	extremely certain
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Section III. Wildlife Management Programs

- A. There are many threatened or endangered species in Colorado that the Colorado Division of Wildlife protects. Please compare the importance of protecting each species listed with reintroducing the Gray Wolf in Colorado. For example, each question below should be read "Protecting the {species} is "extremely", "moderately", or "slightly" more or less important (or of the same importance) than reintroducing the Gray Wolf into Colorado". **Please circle the number that best represents your response.**

Threatened or Endangered Species	extremely less important	moderately less important	slightly less important	of the same importance	slightly more important	moderately more important	extremely more important
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1. Protecting the <u>greenback cutthroat trout</u> is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
2. Protecting <u>the river otter</u> is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
3. Protecting the <u>peregrine falcon</u> is	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
4. Protecting <u>the bald eagle</u> is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.

B. The Colorado Division of Wildlife has limited funds to conduct its activities. As a result, the reintroduction of wolves could potentially divert funds from current wildlife activities. With this in mind, indicate whether you believe each activity is “extremely”, moderately”, or “slightly” more or less important, or of the same importance, than reintroducing the Gray Wolf.

<u>Division of Wildlife Activity</u>	<u>extremely less important</u>	<u>moderately less important</u>	<u>slightly less important</u>	<u>of the same importance</u>	<u>slightly more important</u>	<u>moderately more important</u>	<u>extremely more important</u>	
1. Providing hunting opportunities is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
2. Providing fishing opportunities is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
3. Providing wildlife viewing opportunities is.	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
4. Providing wildlife education in schools is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
5. Protecting and improving wildlife habitat is.....	1	2	3	4	5	6	7	than reintroducing the Gray Wolf in Colorado.
6. Protecting endangered or threatened species that already live in Colorado is.....	1	2	3	4	5	6	7	than reintroducing the Gray wolf in Colorado.
7. Preventing other species in Colorado from becoming threatened or endangered is.....	1	2	3	4	5	6	7	than reintroducing the Gray wolf in Colorado.

Section IV. Background Information *(This information will remain confidential)*

1. What is your gender? **Please check (✓) your response.** ☐ Male ☐ Female

2. How old are you? years

3. What is you race? **Please check (✓) your response.**

☐ White, not of Hispanic origin

Hispanic origin:

☐ Black, not of Hispanic origin

☐ Mexican

☐ Native American or Alaskan Native

☐ European Spanish

_____Asian or Pacific Islander

_____Other Hispanic

_____Other (please specify)_____

4. What is the highest year of education that you completed? ***Please circle the appropriate number.***

0 1 2 3 4 5 6 7 8

{Elementary}

9 10 11 12

{High School}

13 14 15

{2-year college, technical school or some 4-year college}

16

{Finished 4-year college}

17 18 19 20 21 22

{Graduate school, Medical school, Law school, etc...}

5. What is the zip code of your current residence? _____

6. How long have you lived at your current residence? _____

7. Do you belong to any environmental or conservation groups? ***Please check (✓) your response*** _____yes _____no

a. Which ones? _____

8. How would you describe the type of community you grew up in? ***Please check (✓) your response.***

_____a farm, ranch, or rural area

_____a small city (nonsuburb) with 50,000 to 99,000 people

_____a small town (nonsuburb) with less than 10,000 people

_____a city (nonsuburb) with 100,000 to 249,000 people

_____a town (nonsuburb) with 10,000 to 24,999 people

_____a major metropolitan area with 250,000 or more people

_____a large town (nonsuburb) with 25,000 to 49,999 people

_____suburb of a major metropolitan area

Thank you very much for participating in our study!

APPENDIX D

East Slope and West Slope Colorado Counties

East Slope Counties

Adams
Arapahoe
Baca
Bent
Boulder
Cheyenne
Crowley
Denver
Douglas
El Paso
Elbert
Huerfano
Jefferson
Kiowa
Kit Carson
Larimer
Las Animas
Lincoln
Logan
Morgan
Otero
Phillips
Prowers
Pueblo
Sedgwick
Washington
Yuma
Weld

West Slope Counties

Alamosa
Archuleta
Chaffee
Clear Creek
Conejos
Costilla
Custer
Dolores
Delta
Eagle
Fremont
Garfield
Gilpin
Grand
Gunnison
Hinsdale
Jackson
La Plata
Lake
Mesa
Mineral
Moffat
Montezuma
Montrose
Ouray
Park
Pitkin
Rio Blanco
Rio Grande
Routt
Saguache
San Juan
San Miguel
Summit
Teller

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