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LIVING WITH THE GRIZZLY:
PERCEPTIONS OF MISSION VALLEY RESIDENTS

By

Jane R. Frost

B.S., State University of New York at Albany, 1981

Presented in Partial Fulfillment of the Requirements for the Degree of
Master of Science

UNIVERSITY OF MONTANA

1985

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Environmental Studies

Living With the Grizzly: Perceptions of Mission Valley Residents
(96 pp.)

Director: Charles Jonkel *bj*

The Endangered Species Act of 1973 mandates the preservation of the grizzly bear on presently occupied, federally owned and managed lands. However, the grizzlies' seasonal metabolic needs are often antithetical to political boundaries established by Man. Thus, grizzlies inevitably move from publically-owned, legislatively protected habitat onto privately-owned lands. There the protection of habitat and the application of conflict prevention management is scattered or, more likely, non-existent, resulting in adverse human actions that represent a major threat to the grizzly bears continued survival.

In the Mission Valley, on the Flathead Indian Reservation of westcentral Montana, a social survey was conducted during April and May, 1984 to obtain the perceptions of the resident population regarding their cohabitants: grizzly bears. The questionnaire included inquiries about residents: knowledge of grizzly bear behavior and habitat needs, experience with grizzlies, and attitudes toward grizzlies and grizzly bear management issues.

Overall, the resident population's general attitudes regarding grizzly bears were favorable. Residents holding a favorable attitude were likely to: have higher knowledge of grizzly bear behavior and habitat needs, have encountered grizzlies, be younger, and be Native American (vs. White). The results suggest that a necessary first step for bridging the stewardship gap on private lands, is the establishment of a two-way communication flow between agency professionals and residents to disseminate information about the grizzly and initiate resident involvement in grizzly bear preservation efforts.

ACKNOWLEDGEMENTS

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CHAPTER 1
INTRODUCTION

Problem Definition

In 1975 the grizzly bear (*Ursus arctos horribilis*) was declared a "threatened" species south of the 49th parallel. Under the Endangered Species Act of 1973 a legislative mandate was established requiring that federal agencies manage federally owned lands for the protection of threatened and endangered species. Federally owned lands comprise the bulk of the high elevation, mountainous areas used by grizzly bears. However, in meeting their seasonal metabolic needs, grizzly bears also require low elevation habitat areas where private, corporate and state land ownerships prevail. Therefore, being unaware of these political boundaries established by Man, grizzlies inevitably walk away from legislatively protected habitat onto the unprotected habitat of private lands.

On private lands the application of a coordinated and holistic habitat protection policy is non-existent. The "patchwork" effect of private land ownership leaves the conterminous protection and management of grizzly habitat open to the discrepant whims of each individual landowner. Land uses such as livestock production, farming, resource extraction, and, most importantly, land development, clash

with the diverse habitat needs of the grizzly bear. In addition to habitat loss, the proximity of Man and bear on private lands holds the potential for conflict situations to arise, as changing land use patterns affect human and bear behavior. Most certainly, an error in human judgement at the time of an encounter may prove fatal to one or both parties involved.

Presently, as in the past, the decline of grizzly bear numbers is the direct result of competition from Man. The ongoing human impacts to the grizzly include disturbance, habitat depletion, and ultimately, loss of life. These adverse human actions are currently the major threat to the grizzly bears' continued survival. The ultimate fate of this transcendent wilderness animal will not rest solely on legislative mandate. Rather, the grizzlies survival will be determined by the will of the people who are living with him.

"...the real problem (of wildlife management) is not how we shall handle the animals...the real problem is one of human management. Wildlife management is comparatively easy; human management difficult... An innumerable host of actions & attitudes, comprising perhaps the bulk of all land relations, is determined by the land-user's tastes and predilections... By and large our present problem is one of attitudes. To rebuild the wildlife resource, you must rebuild the people who use it." (Aldo Leopold 1949).

The Grizzly Bear's Ecosystem

In early 1982 the U.S. Fish and Wildlife Service; in cooperation with the Montana Dept. of Fish, Wildlife and Parks, and other federal and state agencies; released the Grizzly Bear Recovery Plan (GBRP). In this plan six distinct grizzly bear ecosystems are identified (see Figure 1). Of these six, only three are deemed "recoverable", i.e., able to "provide viable, self-sustaining populations in perpetuity" As stated, "The conservation and recovery of three populations, as opposed to only one or two populations, is believed necessary to assure perpetuation of the species to a point that no longer requires the protection of the Endangered Species Act." (GBRP, 1982 p. 2).

The three priority ecosystems for recovery are the Yellowstone, the Northern Continental Divide, and the Cabinet-Yaak. However, the prospective for recovery in two of these ecosystems does not look good. As of yet, the Cabinet-Yaak population size has not been empirically established (GBRP 1982). The estimate, resting solely on theoretical assumptions, is discouragingly low. And in the Yellowstone Ecosystem, scientists have recently voiced a strong concern over the apparent decline in grizzly bear population numbers over the past few years. Only in the Northern Continental Divide Ecosystem is the grizzly

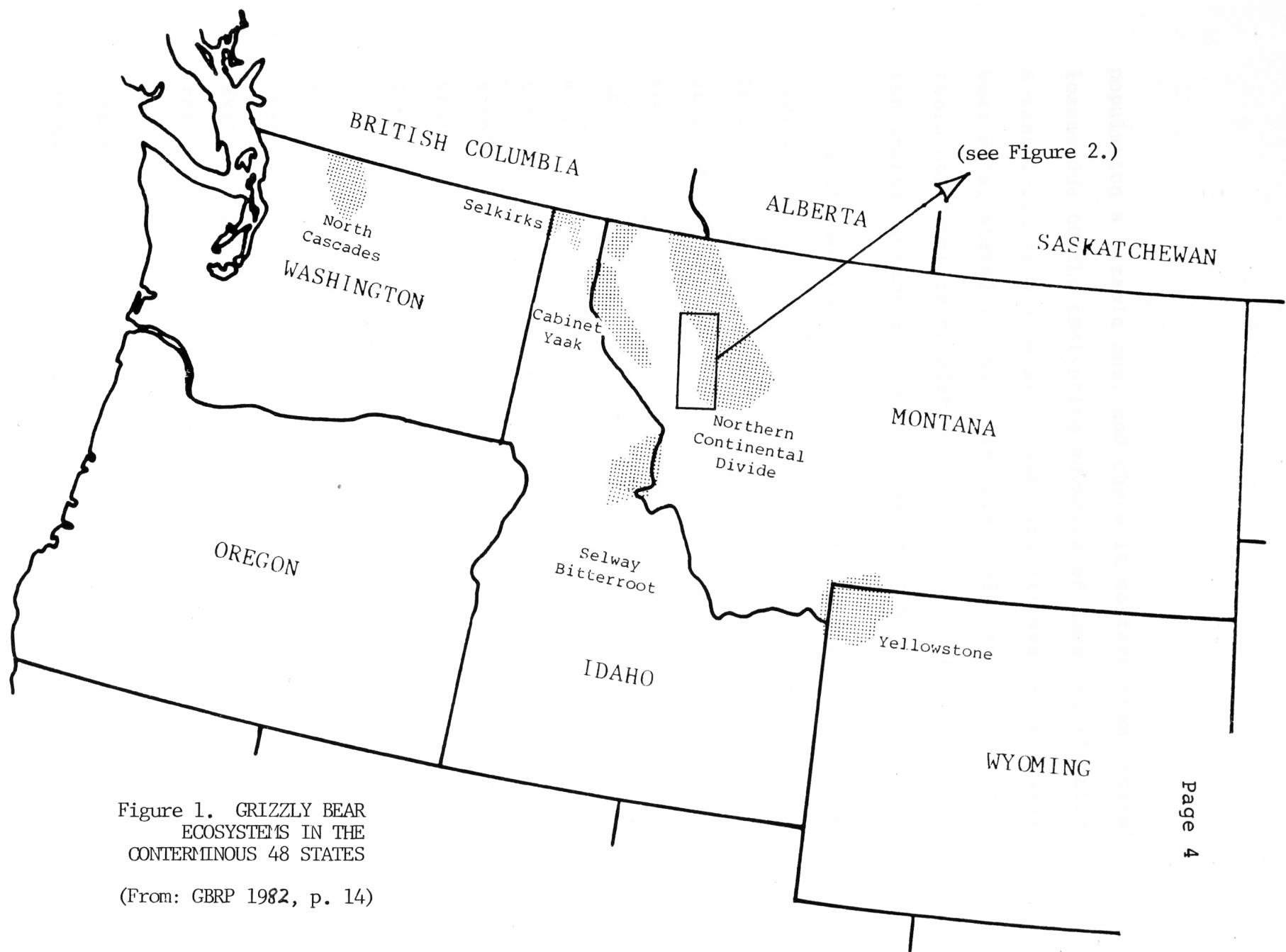


Figure 1. GRIZZLY BEAR
ECOSYSTEMS IN THE
CONTERMINOUS 48 STATES

(From: GBRP 1982, p. 14)

population a sizable one, and there it suffers from habitat losses due to the continuing advances of human civilization. A task force of biologists, examining all available grizzly bear data, stated in their February, 1984 report that they could not "confirm population stability" in the Northern Continental Divide Ecosystem (Task Force Report 1984).

In the southwestern portion of the Northern Continental Divide Ecosystem lies the Mission Mountain Range (Figure 2). It contains an unique and increasingly isolated segment of grizzly bear habitat. Its uniqueness is rooted in the area's geologic history. In the Mission Valley, to the west of the range, depositions of glacial, lake, and alluvial soils have created a complex and porous soil mosaic. At low elevations this soil composition, in combination with the area's physiographic structure, resulted in the creation of what scientists call, "seep" areas (Servheen 1981). The seeps promote intensified vegetative production which constitutes one of the richest food sources available to the Mission grizzlies (Hansen 1979 and 1981, Servheen 1981). These nutritious feeding sites, combined with the availability of fingering riparian drainages extending into the valley, are conducive to intensive seasonal grizzly bear use of this area. Not only does the area contribute enormously to the nutritional needs of the grizzly, but it is quickly becoming the last remaining low elevation grizzly

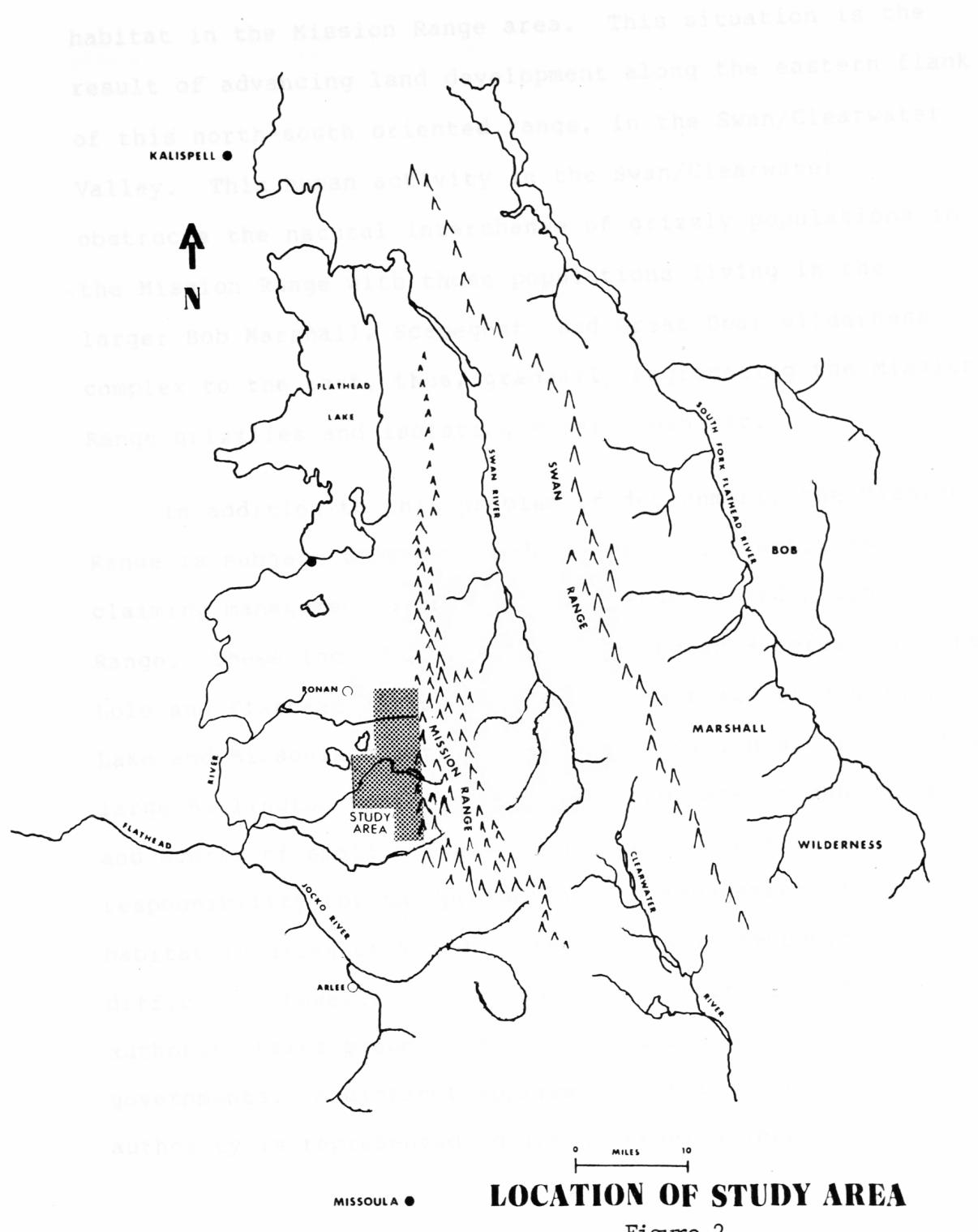


Figure 2.

habitat in the Mission Range area. This situation is the result of advancing land development along the eastern flank of this north-south oriented range, in the Swan/Clearwater Valley. This human activity in the Swan/Clearwater obstructs the natural interchange of grizzly populations in the Mission Range with those populations living in the larger Bob Marshall, Scapegoat, and Great Bear wilderness complex to the east, thus, gradually segregating the Mission Range grizzlies and isolating Mission habitat.

In addition to this problem of detachment, the Mission Range is subject to a multitude of political entities claiming management authority over lands in and around the Range. These include: the Flathead Indian Reservation, the Lolo and Flathead national forests, the State of Montana, Lake and Missoula counties, soil conservation districts, the large Burlington Northern Railroad corporate landholdings, and scores of small private land owners. Sorting out responsibility for the protection and management of grizzly habitat in areas of mixed jurisdictions is recognizably difficult. However, under the U.S. Constitution, federal authority takes precedence over all state and local governments. A distinct application of this federal authority is represented on Indian Reservations.

Indian Reservation Sovereignty

In 1871 the U.S. government established Indian Reservations. Since that time U.S. policy toward Native Americans has run a gamut of indecisiveness. At first the General Allotment Act of 1887 tried to "acculturate" the Indian to American ways by authorizing the ownership of individual portions of the reservation's land by each of the Indian residents (Barsh and Henderson 1980). The land remained in U.S. "trust" for 25 years while the "allottee" learned the arts of husbandry for assimilation into the white culture. At the end of this time the allottee received the title in "fee", free of all encumbrances. Following the allotment of land to Indian residents, the abundant remaining lands were open to non-Indian settlement. Thus the General Allotment Act drastically decreased Indian held lands within reservation boundaries, and resulted in mass, mixed-ownership "checkerboarding" of Indian and non-Indian landholdings.

In 1934 the Federal policy of assimilation was reversed with the passage of the Indian Reorganization Act which allowed tribes to set up self governing legal structures. Then in 1953, in another policy reversal, Public Law 280 allowed for the extension of civil and criminal jurisdiction on reservations to the states, should the state desire it. In 1968, tribal self-determination came about under the

Indian Civil Rights Act and Public Law 280 was amended requiring tribal consent for state jurisdiction over reservations.

State powers of regulation in Indian country (within reservation boundaries) generally parallel state powers of taxation. State regulatory power extends to non-Indians in Indian country but it is subject to the limitations that 1) it can be pre-empted by federal law and, 2) it is rendered invalid if it interferes with the right of reservation Indians to make their own laws and be governed by them (Conby-Jr. 1981, Pevar 1983).

Generally it can be said that present tribal sovereignty is as follows:

"1) Indian tribes possess inherent government power over all internal affairs; 2) the states are precluded from interfering with the tribes in their self-government and; 3) Congress has plenary power to limit tribal sovereignty when a question of tribal power arises, the relevant inquiry is whether any limitation exists to prevent the tribe from acting, not whether any authority exists to permit the tribe to act. As a sovereign it is free to act unless some federal intrusion has affirmatively modified that sovereignty." (Conby-Jr. 1981, p. 164).

Several recent court decisions have supported Tribal regulatory authority over land and activities on lands within Reservation boundaries. Of these, the 1980 case of Mescalero Apache Tribe v. State of New Mexico establishes

tribal power over wildlife management, while the 1982 cases of Sechrist v. Quinault Tribe and Knight v. Shoshone and Arapahoe Indian Tribes clarify land zoning authority. These later cases held that zoning control over subdivision was deemed necessary to protect the "general welfare" (rural character of the reservation lifestyle) of inhabitants, and that tribes held the sovereign power to impose zoning regulations over the activities and land of non-Indians within reservation boundaries in the interest of preserving and protecting their homeland from exploitation. Thus, tribal governments hold exclusive regulatory power over the land, and activities on the land within reservation boundaries.

On the Flathead Indian Reservation

The "seep" areas of rich grizzly bear habitat lie in the valley on the western side of the Mission Range within the Flathead Indian Reservation. The areas of greatest grizzly bear use radiate from the bear travel corridor afforded by the Post Creek drainage. As mentioned earlier, this rich bottom-land promotes plant production, therefore lending itself to agricultural development. Historically, this area has long supported a farm and ranch economy.

In 1910, the influence of the General Allotment Act reached the Flathead Reservation. The area was opened to white settlement, and towns like Polson and Ronan sprang up (Fahey 1974). Along the Mission Valley, white settlers established farms and ranches and began intensified agricultural production. Over the years, the grizzly's range in the Mission Valley has been increasingly impacted by the pressures of Man's activities, and as a result the bear's numbers have declined.

As the General Allotment Act intended, with the influx of white settlers came a mixing of cultures, at least in a physical sense. A review of the doctrines of these two cultures reveals that a mixing of their values is apparently antithetical. For example, the foundation of the European culture was the Judeo-Christian religious faiths. The doctrine of these faiths placed Man at the center of the universe, having dominion over all that was non-human in the natural world. It spurred a culture that ambitiously used the land, "taming" all that was wild and uncontrolled (Livingston 1981). Contrary to this approach, the Native American cultures were founded on a doctrine that preached reverence for nature and life. Animals came before Man as links to the "Great Spirit". Peace was obtained through harmony with nature, not as a result of dominion over it (Brown 1964). These fundamental cultural differences

originally separated the Whites and Native Americans in their approach to the use of reservation land. Today evidence remains of the influence and distinctions of these cultural foundations.

In the interest of maintaining a viable grizzly bear population in the Mission Mountain Range, the Confederated Salish and Kootenai Tribal Council and the federal Bureau of Indian Affairs (BIA), Flathead Agency, established the Flathead Indian Reservation Grizzly Bear Management Plan (FIRGBMP) in 1981. The plan's founders recognized that the maintenance of a viable grizzly population requires a reduction in competition between Man and bear. For instance, they state that, adverse impacts to grizzly habitat areas and one-on-one interspecies conflicts should be minimized. The plan lists human-caused mortalities, habitat modification, and disturbance as the activities which threaten the grizzly bears' existence in the Missions. In addition to the usual management of grizzly bear populations themselves, the plan also addresses habitat management at the local level; an issue that constitutes no simple task in an area where the bulk of the land is privately owned by residents of two different cultures, and where this "patchworking" ownership complicates jurisdictional authority.

The current threat to the survival of the grizzly bear in the Mission Valley is the subdivision of private landholdings. Subdivision decreases the low elevation, rich food sites available to the grizzly. It may also lead to Man-bear confrontations, if new residents are uninformed of the presence of the grizzly and of its behavior. Thus in the interest of decreasing adverse human actions toward the grizzly, the FIRGBMP states, "An active public relations program explaining traditional grizzly bear habitat use and the importance of low elevation habitats to the entire Mission Mountain grizzly bear population will be initiated." It adds that, "During this public relations effort, situations of potential human-bear conflict will be identified and discussed with landowners" (FIRGBMP 1981, p. 33). For the past three years the public relations effort has been using news bulletins, informal one-on-one discussions with landowners, and formal evening presentations to bring the above points to the residents' attention.

Chapter 2

THEORETICAL FRAMEWORK

Public Relations and Attitude

According to Fazio and Gilbert, "trying to practice public relations without first identifying specific publics is like shooting at a blank piece of cardboard, then drawing target rings around the hole" (Fazio and Gilbert 1981, p. 41). They propound that a successful public relations effort must first identify the characteristics of the various "publics" within "the (general) public". A "public" is defined as "two or more people with a common interest who may be expected to react similarly to a particular situation or issue" (Fazio and Gilbert 1981, p.41). Classifying the infinite characteristics of the general public into smaller, more homogeneous groups makes public relations efforts an easier and more directed task. Understanding where each group of people stand on an issue allows one to present a targeted message in a way that it will be understood. Public relations campaigns are therefore efforts to influence attitudes and behavioral actions.

Attitude has been described in a general sense as "a learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object" (Fishbein and Ajzen 1975, p. 6). This definition

implies a strong link between attitude and behavior. It would seem that if one could directly measure attitude, behavior could be predicted and perhaps influenced. But, given the complexity of human thought processes and the diverse environmental dimensions that may influence them, the most definitive statement psychological researchers will offer about the attitude/behavior link, is that "it has strength". However, research in the field of Behavioral Psychology has shed much light on the understanding of attitudes and their relationship to human behavior.

Attitude Theory

Fishbein and Ajzen's 1975 publication summarizes research to date in the attitude field by presenting first an overview of attitude theory and measurement, followed by a discussion of the determinants of beliefs, attitudes, intentions, and behaviors, with their relationship to each other. They end with a discussion of strategies for attitude change.

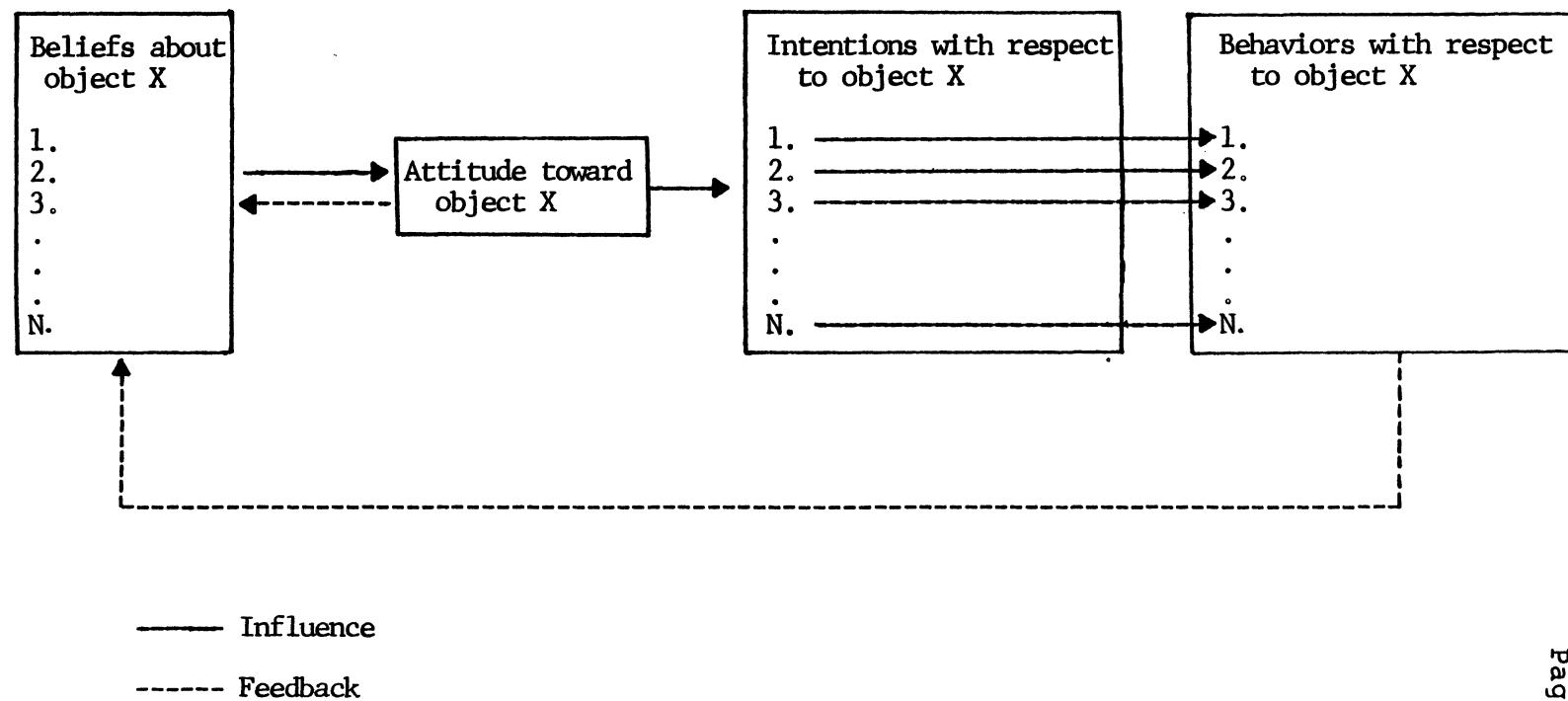
Referring back to the definition of attitude as "a learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object", Fishbein and Ajzen discuss some of the underlying attitude features and their ambiguities. These features include "the notion that attitude is learned, that it

predisposes action, and that such actions are consistently favorable or unfavorable toward the object" (Fishbein and Ajzen 1975, p. 6). The authors state that most psychologists would probably agree with this description of attitude. However, they do caution that it leaves some basic problems unanswered. For example: ambiguities in the interpretation of the phrase "respond in a consistently favorable or unfavorable manner", disagreement regarding the nature of predispositions, and indecisiveness as to which past experiences are relevant to the formation of a predisposition, as well as several other problems.

Fishbein and Ajzen also present a conceptual framework for attitude measurement, specifying three attitude characteristics. The characteristics include beliefs about an object (the cognitive element of attitude), feelings or evaluative attitude toward an object (the affective element of attitude), and behavioral intentions toward an object (the conative element of attitude). Figure 3, Fishbein and Ajzen's conceptual model, demonstrates the interrelationship of these components to each other, and to subsequent behavior with respect to the object.

Beliefs are the building blocks in the conceptual structure. Beliefs associate the object with attributes. "At any point in time a person holds a limited number of salient beliefs about any given object, action, or event"

Figure 3. FISHBEIN AND AJZEN'S CONCEPTUAL FRAMEWORK RELATING BELIEFS, ATTITUDES, INTENTIONS AND BEHAVIORS.
(from Belief, Attitude, Intention and Behavior: and Introduction to Theory and Research, 1975,
p. 15)



(Fishbein and Ajzen 1975, p. 297). Salient beliefs are subject to change and may be strengthened, weakened, or replaced by new beliefs. Each belief carries a weight of importance called "belief strength". In the formation of feelings (labeled as attitude in Figure 3) salient beliefs are summed, each contributing in accordance with its particular weight/strength. Measurements of feelings usually locate the subject on a bipolar evaluative dimension (or scale) with respect to the object. Once formulated, feelings will influence both future beliefs and future behavioral intentions. Behavioral intentions are viewed as direct antecedents to behavior, and like beliefs carry some weight or strength. "Intentions involve four different elements: the behavior, the target object at which the behavior is directed, the situation in which the behavior is to be performed, and the time at which the behavior is to be performed" (Fishbein and Ajzen 1975, p. 292).

Fazio and Zanna (1981) shed light on the variable strength of the attitude-behavior link when they state that, "attitudes based on direct, behavioral experience with an attitude object are more predictive of later behavior than are attitudes based on indirect, non-behavioral experiences" (Fazio and Zanna 1981, p. 172). Also, "the more an attitude represents a summary of relevant past behaviors, the more that attitude will be predictive of future behavior" (Fazio

and Zanna 1981, p. 176). With direct experience, an individual's attitude takes on a clearer focus, becomes more refined, is held with higher confidence, is more persistent over time, is more resistant to counter-influence, and is more likely to guide behavior. Fazio and Zanna further state that this differential strength of direct experience attitudes is derived from observational learning, activation of an emotion or empathy response, and the extent to which the experience left vivid and accessible memories.

Milton Rokeach proposes an alternative view regarding the formative behavioral action process. Rokeach emphasizes the importance of values as underlying predeterminants of attitude. He states,

"Values (a centrally located belief about how one ought, or ought not to behave, or about some end state of existence worth or not worth attaining), are abstract ideals, positive or negative, not tied to any specific attitude object or situation, representing a person's beliefs about ideal modes of conduct and ideal terminal goals" (Rokeach 1980, p. 124).

Rokeach contends that values are the best measure of an individual's conduct, since they represent the underlying core of attitudes.

Attitude Research on Wildlife and Bears in the U.S.

In managing wildlife, the managing agent should choose from among all available alternatives. Public opinion on controversial issues such as bear management can frequently limit the number and kinds of alternatives, or create a perception of limits to the managing agent. In these situations, perceptions rather than reality may prevail. This being the case, it is unfortunate that studies on public attitudes about wildlife issues and, more specifically, bears, have been few.

In the early seventies, Dr. Stephen Kellert of Yale University conducted the first national survey of American attitudes, knowledge, and behavior toward wildlife and natural habitats. His work, under contract to the U. S. Department of Interior Fish and Wildlife Service, resulted in the publication of numerous enlightening articles throughout the later seventies and to the present. The topics he has addressed include: attitudes toward and knowledge about animals, attitudes toward critical wildlife and natural habitat issues, attitudes and characteristics of hunters and antihunters, perceptions about animals, social and perceptual factors in species preservation, and the issue of wildlife versus the private landowner.

An interesting result of Dr. Kellert's examination of American attitudes is his identification of ten wildlife value sets with the human perceptions that are characteristic of each. These value sets include: naturalistic, ecologicistic, humanistic, moralistic, scientistic, aesthetic, utilitarian, dominionistic, negativistic, and neutralistic. In his 1981 report, Kellert discusses the prevalence of the utilitarian (concern for the practical and material value of animals) and dominionistic (interest in the mastery and control of animals) value sets among private landowners who have large acreages, or an economic dependence on the land. In direct contrast to these values, the small property owner demonstrates a higher regard for the needs of wildlife, by expressing more naturalistic (interest and affection for wildlife and nature), ecologicistic (concern for the interrelationships between wildlife species and natural habitats), and moralistic (concern for the right and wrong treatment of animals) persuasions. Kellert expresses concern that resource professionals shift aid and understanding to the efforts of small landholders who are protecting wildlife and habitat, while on the other hand directing special educational efforts toward those large landholders who disavow the needs of wildlife.

Two studies regarding black bears were conducted in the Great Smoky Mountain National Park. In the first, Burghardt et al. (1970) sampled 700 park visitors regarding their knowledge and attitudes concerning black bears. The study purpose was to decrease visitor-bear problems by addressing the informational needs and behavior of visitors to the park. The study served as a baseline information gathering instrument. It was followed four years later by Pelton et al. (1974), with a study of the attitudes and opinions of visitors experiencing property damage and/or injury by black bears. Responses of those experiencing property damage/or injury were compared to those in the previous study of general visitors. The results showed that visitors did not heed information about black bear problems distributed by Park officials, which 68% of the injury victims said they received. However, respondents who experienced property damage/or injury harbored little ill will toward the animal, expressing positive attitudes toward black bears in general. Interestingly, 42% admitted openly that they were at fault in the incident.

A recent study was published in 1981 measuring public attitudes toward black bears in the Catskill Mountains of New York. The study was conducted by the N. Y. State Department of Environmental Conservation to provide information for managing black bears in the Catskill region.

The attitudes of private landowners, camp managers, and corporate landowners were solicited. In general, few respondents reported having had problems with bears, few believed they were a nuisance, and most wanted bears perpetuated in the Catskills. The majority of private landowners wanted the bear population to increase. It was also found that having experiences with bears was associated with a positive attitude toward them.

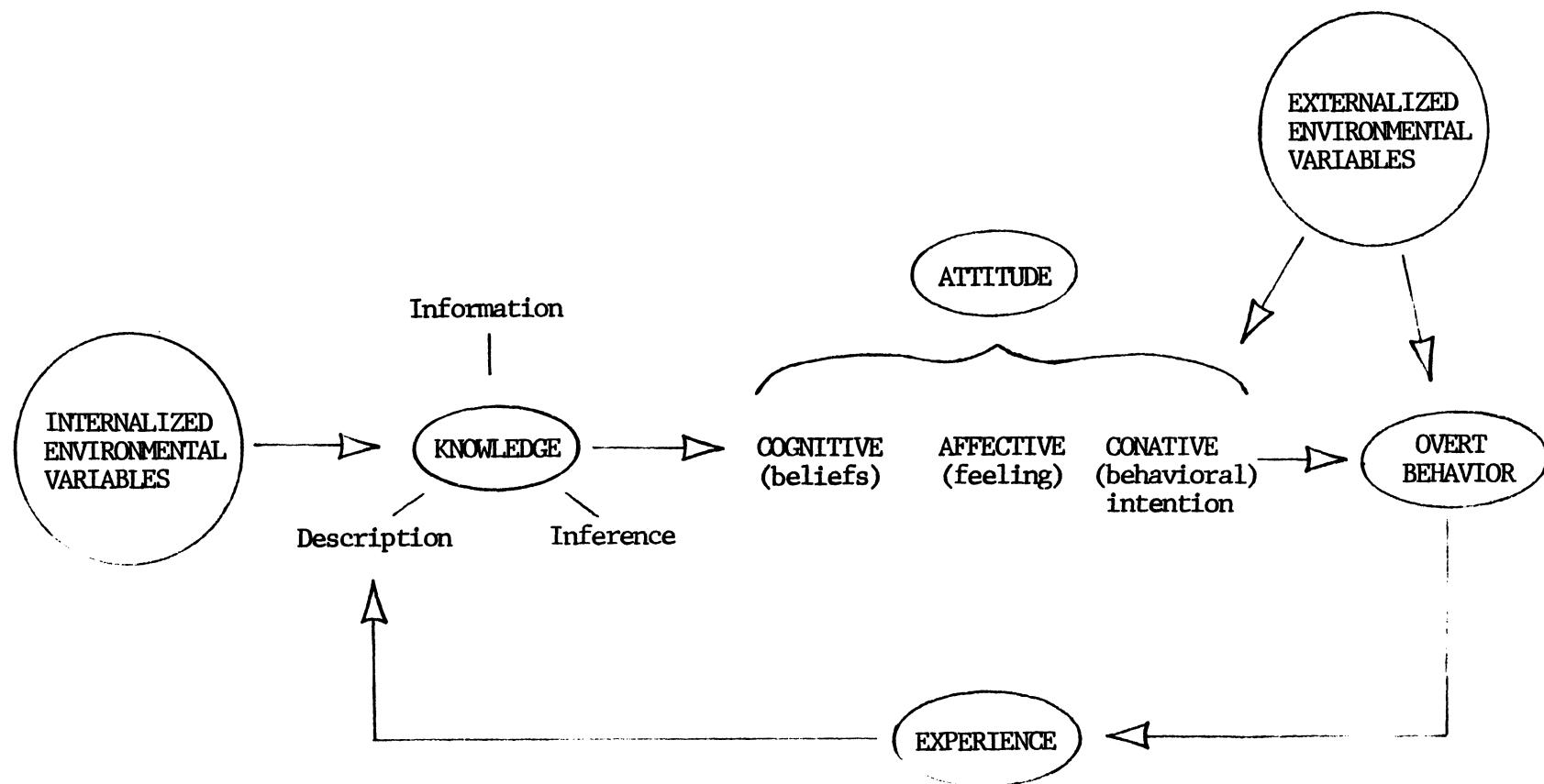
A study of attitudes toward grizzly bears was conducted on visitors to Glacier National Park by a Master of Science candidate at Michigan State University, Mihalic (1973). His thesis hypothesized that "attitudes are a function of past behavior and experiences and, in turn, cause a predisposition to respond with some future behavior" (Mihalic 1973 p. 63). Using a complex theoretical framework Mihalic unsuccessfully attempted to prove this hypothesis. However, Mihalic did find that visitor opinion toward the grizzly was positive; that age, sex, education, and place of visitor origin intervened in attitude formation; and that attitude toward grizzlies took on a positive or a negative (non-neutral) mode when experiencing an encounter.

Conceptual Framework

As is evident, little research has been done to determine human perceptions of black bears, and next to none has been done for grizzly bears. This lack of information leaves little grounding for efforts to protect grizzlies and to manage their habitat on private lands.

The purpose of the research study, "Living With the Grizzly", was to describe the human resident in the Mission Valley grizzly bear's habitat, so that insights into residents' perceptions could be obtained and public involvement efforts for the preservation of the animal could be improved. The definition of "resident" for the purpose of this study is "any individual living on private land holdings which are seasonally frequented by grizzly bears, and whose daily actions and/or long-range land management decisions might adversely impact the survival of the Mission area grizzlies." In order to obtain their perceptions, a questionnaire was administered which inventoried residents': knowledge of grizzly bear habitat needs and behavior, attitudes toward grizzlies and grizzly bear management, and experiences with grizzlies (Appendix I). Responses were examined in the context of the attitude model presented in Figure 4. This attitude model represents an elaboration of the concepts of Fishbein and Ajzen (1975) discussed earlier. In the model, distinct components have been separated for

Figure 4. ATTITUDE MODEL



clarity in discussion of the attitude formation process. This model will be referred to and reviewed in more detail in the following sections.

In addition to the description of "residents", some hypotheses were proposed regarding the results.

A) The following independent variables will associate with attitude components as stated:

- 1) Native Americans will have more positive attitudes than will Whites.
- 2) cultural/religious symbolism of the bear will be linked with positive attitudes.
- 3) young residents will have more positive attitudes than will old residents.
- 4) higher educated residents will have more positive attitudes than will less educated ones.
- 5) non-land based occupations (clerk, professional, etc.) will have more positive attitudes than those employed in land based occupations (farming, ranching, logging, etc.).

B) Encounters with grizzly bears will have the following influences:

- 1) knowledge about grizzlies will increase with the number of encounters.
- 2) attitudes will be more positive with increased encounters.

3) negative attitudes will appear where there has been loss of situational control, such as having a problem with a grizzly on the property.

Gathering baseline information about attitudes/perceptions of Mission Valley residents regarding the Mission grizzly population is the critical element in identifying and understanding the Mission Valley "publics". The usefulness of this information to the FIRGBMP public relations effort is several fold. First, it establishes an informational foundation from which public relations actions can be based. For example, it identifies: What are the misconceptions about grizzly bears and their behavior? What problems are stumbling blocks to favorable resident action? What is the residents' understanding of current management practices? And who are the residents most likely to harm the bear?

Secondly, based on this information, agency actions can be tailored to best meet the needs of both the human residents and the grizzly bear, thus negating unnecessary conflicts. For example, agency actions may include: the dissemination of pertinent information on topics such as bear behavior and habitat needs which residents may be lacking; the offering of alternatives/programs that overcome stumbling blocks to resident cooperation or understanding, especially for the discrete "publics"; and

the establishment of joint problem-solving efforts between local residents and agencies. Ultimately, when a better understanding of need can be reached by both the agencies and the residents, coordinated efforts might then be employed to obtain a holistic solution which addresses local stewardship of the grizzly.

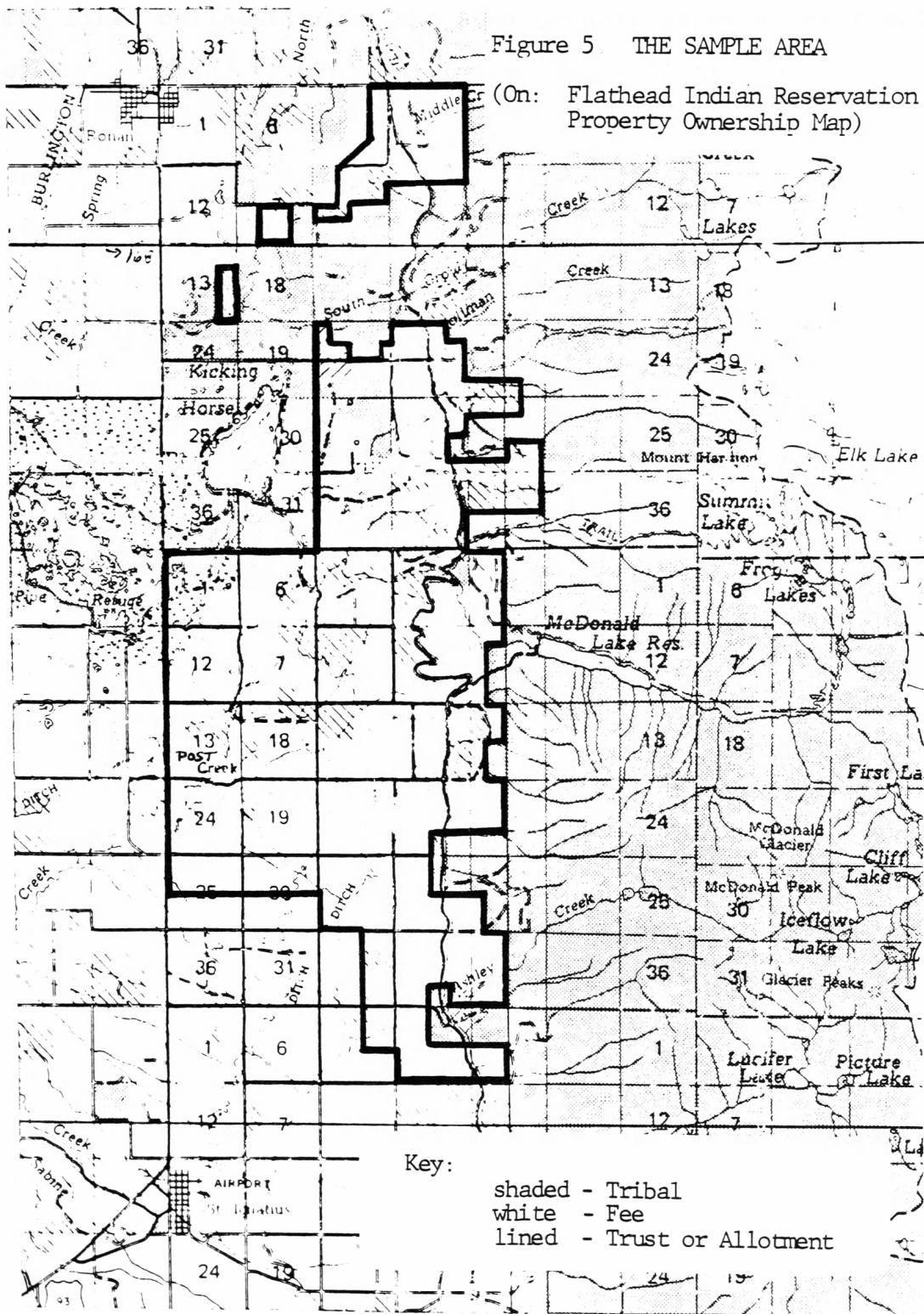
Methods

The social survey was conducted in the Mission Valley on the Flathead Indian Reservation of Montana during April and May of 1984. Residents of the study area received a questionnaire in solicitation of their attitudes, knowledge levels, and experiences with the grizzly bear.

The survey location lies on the western flank of the Mission Range in the Fort Conah quadrant (Figure 5). The area extends from Ronan on the north to just north of St. Ignatius on the south (12 miles in length), and from Highway 93 on the west to the tribally-owned Mission foothills on the east (4.5 to 5 miles in width). The criteria for selection of this portion of the valley were: 1) the documented richness of grizzly foods, 2) the crucial nature of this food source to the Mission grizzly's survival, 3) intense grizzly activity, 4) spreading subdivision and human activity, and 5) heightened interspecies competition leading to conflict situations.

Figure 5. THE SAMPLE AREA

(On: Flathead Indian Reservation
Property Ownership Map)



The final delineation of the area boundaries were the result of consultation with BIA Biologists, Jim Claar and Bob Klaver; Border Grizzly Project Director, Dr. Charles Jonkel; and this researcher's personal observations of vegetative cover for bear travel corridors, with corroborating reports by residents of bear sightings and activity. Time and monetary constraints on sample size were additional determinants of the study area boundaries. The area sampled is conterminous and represents the entire population of residents, both owners and renters, living in that portion of the Mission Valley which experiences the most intense grizzly activity.

One questionnaire per household was personally distributed by the principal investigator to each residence within the study area. The small number of unoccupied or abandoned residences were, of necessity, excluded. Surveyed residents were informed of the study's purpose, the agencies' interest in their opinions, and the value of their response. For their convenience, a stamped return envelope accompanied each questionnaire. At the end of a two week period, those not responding were contacted again, given a second questionnaire, and the necessity of their response was stressed once more. Of the original 209 occupied households contacted, 154 questionnaires were returned, a 74% response rate. These responses were analyzed on the

University of Montana's DEC20 Computer using the Statistical
Package for the Social Sciences (SPSS 1983).

Chapter 3

RESULTS

The statistical findings will be discussed in the context of the model presented earlier. First, the residents' personal characteristics, experiences with grizzly bears and knowledge of grizzly bear habitat needs and behavior are presented under the heading Environmental Variables. Then, under Attitude Components, residents' responses to cognitive, affective, and conative attitude measures are presented. All variables showing strong associations with attitude components are then discussed. The statistics presented in the following sections represent all of the 154 households who responded to the questionnaire.

Environmental Variables

Attitudes are greatly influenced by the environment in which an individual lives. The structure of an individual's environment is both a function of "who the individual is" (his/her personal characteristics and experiences), and the influences of the "world in which they live" (factors affecting the social, economic, and political milieu). These structures contribute to attitude formation and they influence behavior. Labaw (1980) claims that these

structures often explain and substantiate human behavioral patterns to a greater extent than expressed attitude alone, as they provide the context within which to interpret meaning.

'Population Characteristics'

Race was represented by Native American and White only. Twenty percent of the study population identified themselves as Native American and 80% as White (this sample figure is representative of the 1981 census statistics for these two races within the reservation boundaries). The sex comparisons for respondents were 30% female, and 70% male. Residents' ages ranged from 20 to 84 with a median age of 42. Years of formal education were grouped into three categories: up to and including 12 years (high school), 46% of the total population; 13 to 16 years (college), 38%; and 17 years or over (post-bachelors), 16% of the respondents.

Occupations represented the entire mix from laborers to professionals including housepersons, farmers and ranchers, small business owners, outfitters, retirees, loggers, and others. About all that can be said aggregatey about occupation is that, in general, the land-based (outdoor) occupations such as logging, farm laboring, and outfitting, etc., represented approximately 1/3 of the population. The

other 2/3rds consisted of indoor occupations such as sales, service, professionals, homemaking, etc., and retirees. Some retirees stated that their past occupation was land-based, or they mentioned being in semi-retirement (i.e., still farming or ranching some). Additionally, many residents stated multiple occupations, often of different types. For these reasons only approximations for occupations are stated. Occupation was not found to be important in its relationship to other variables, and thus no further distinctions using occupation will be discussed.

Research has shown that a childhood spent in larger towns or cities is associated with a more positive attitude toward the protection of wildlife (Kellert 1976, Mihalic 1973). Conversely, non-protectionist (or utilitarian) attitudes show a higher association to rural residency (Kellert 1979). When asked, "what was the size of the area where your childhood was spent" (CHILD), 65% answered rural (farm or ranch), with the remaining 35% distributed among the five larger class categories from small towns to large cities. The median number of generations spent living in western Montana (YRSWM) was two, the median number of years spent living in the Mission Valley (YRSMV) was twenty, and the median number of years spent living on present property (YRSPROP) was eight. These figures indicate that, for the most part, valley residents have spent a substantial amount

of time in the Mission area.

There are several recreational activities which possess the potential for bringing an individual in contact with grizzly bears. Of the activities that were listed, those showing the highest frequency of participation were: fishing 68%, hunting 55%, berry picking and wood gathering 55%, and day hiking 38%.

Fifty four percent of the survey population were members of an organization or club. The most frequent types of membership, in descending order, were religious (21%), recreational and social (13% each), and conservation and business (12% each).

In the interest of maintaining or increasing property value for personal gain, it might be assumed that a landowner would be more receptive to land management appeals than a renter would be. With this in mind, an inquiry into property ownership was made. The results were: residents who stated they owned the land but did not specify the type of ownership constituted 43% of the respondents, residents owning fee lands constituted 32%, residents owning trust/allotted lands numbered 14%, residents who rented but did not own land numbered 10%, and residents who both rented and owned land numbered just 1%.

Conflicts between Man and grizzly have frequently been the result of the grizzly's attraction to large and small livestock (Jonkel 1980). To ascertain the extent of animal husbandry in the area, an inquiry was made as to the types of animals residents have on their property. Forty percent said they raise small livestock, 39% raise large livestock, and 39% raise furbearing animals. Additionally, 87% said they occasionally had large wildlife such as deer, coyotes, and bears on their property.

The formulation of beliefs regarding a particular issue may be indirectly obtained through an individual's perception of the relayed experiences of others such as friends, relatives, or neighbors (Muth & Hendee 1980, Rokeach 1980). When asked if their neighbors had seen grizzly bears on their property, 88.5% of the population said yes. But when asked if neighbors or friends manage their property to maintain and protect grizzly bear habitat, only 4% offered a definitive yes. Forty percent said their nearby neighbors left food items around that could attract grizzly bears onto the property. Seventy percent stated that some of their local neighbors, friends, or relatives have had a problem which was caused by grizzly bears.

'Experience'

Direct personal experience and/or current actions are the best indicators of present attitudes and offer the best prediction of future behavior (Fazio and Zanna 1981, Labaw 1980). When asked if grizzly bears had been seen on their property, 56% of the residents said yes, but only 20% are managing their property to maintain and protect grizzly habitat. Seventeen percent of the population said they have had a problem with grizzly bears on their property, and 78% voiced no problems. Table 1 details the types of problems, the year that the problem occurred, and the effect that having a problem had on the individual's response toward what should be done with the Mission grizzlies. For residents who stated that their problem with grizzly bears had not been solved, responses as to what should be done with grizzlies tended toward the "get rid of" or "decrease numbers" categories as compared with the prevalent "leave as is" or "increase numbers" responses of residents who stated that their problems with grizzlies had been solved.

Residents were also asked if they had ever seen a bear in the wild; 94% had. Seventy one percent of the residents could say definitively that they had seen a grizzly bear. Of those who stated that they had seen grizzlies, 41% had experienced their last encounter with the animal on their own property (36% of the total population).

Table 1. PROBLEM(S) WITH GRIZZLY BEARS ON PRIVATE PROPERTY (n = 26)
(numbers in parentheses are n's)

A. Most recent year of the problem:	1978 (2)	1982 (8)
	1979 (1)	1983 (5)
	1980 (2)	1984 (2)
	1981 (2)	

B. Types of problems:

Nuisance (disturbing livestock or children, walking by).....	10
Damaging fruit or orchards.....	5
Damaging other property (fences, buildings, etc.).....	4
Killing livestock.....	11

C. Is the problem solved:

	<u>No. responses</u>	<u>Mean for year of problem</u>
Yes	9	Jan., 1981
No	11	July, 1982
no response	6	Jan., 1981

D. "What should be done with grizzlies in the Mission Mountains?"

	<u>Problem not solved</u>	<u>Problem solved</u>
Get rid of them	2	1
Decrease numbers	3	-
Leave as is	1	3
Increase numbers	-	3
Don't know	4	1
No response	1	1

Several of the variables mentioned so far were found to be associated with each other. The size of the area where childhood was spent was positively associated with years of education ($\rho = .331$) and negatively associated with age ($\rho = -.277$). Education showed a negative association with age ($r = -.299$), and with the number of years lived in the Mission Valley ($r = -.235$). The number of years lived in the Mission Valley is positively associated with number of encounters with a grizzly ($\rho = .212$).

'Knowledge About Grizzlies'

One feature of attitude is the notion that it contains an element of learning. Knowledge directly influences the "predisposition to respond". Thus it is extremely important that any knowledge held be accurate. In the interest of preventing Man/bear interspecies conflicts, identifying the Mission residents' level of knowledge about grizzly bear behavior and habitat needs is a necessity.

Residents defined newspapers (67%), television (62%), and radio (33%) as their three most important sources of general information. These preferences were followed in popularity by friends/neighbors (28%), magazines (26%), and books (15%). Seldom mentioned were the tribal newspaper (9%), agency professionals (9%), and lecture/classes (2%).

To demonstrate the residents' recognition of the differences between black bears and grizzly bears, Table 2 has been included. It shows resident response to the inquiry of whether behavior and habitat needs of the black bear and grizzly bear are the same. These responses are crosstabulated with responses as to whether agency management of the two bears is the same. For the most part, Table 2 shows that residents were aware that black bear and grizzly bear behavior and habitat needs are not the same, and that their management by agencies is not the same.

Only 34% of the population knew that the Montana grizzly is classified as "threatened" under the U.S. Endangered Species Act. Their knowledge of grizzly bear population sizes is shown in Table 3. Note that only 18% of the population answered correctly, between 16 to 32 individuals, for the number of grizzlies presumed to be living in the Missions. No information was uncovered as to the particular characteristics of this 18%.

Approximately 75% of the population knew that a grizzly standing on its hind legs with head up and ears forward is gathering information, with 14% interpreting this behavior as a sign the bear is angry and may attack. Huffing and teeth clacking was recognized as threat behavior by 61% of the population. However, the remaining 39% (an astonishingly large number) were unaware that this last

Table 2. RESPONSES COMPARING GRIZZLY BEARS TO BLACK BEARS (numbers in parentheses are n's)

Are behavior and habitat the same?	Is agency management of both bears the same?					totals
	strongly agree	agree	uncertain	disagree	strongly disagree	
strongly agree	(1) 0.7%	-	(1) 0.7%	-	-	(2) 1.4%
agree	-	(9) 6.2%	(3) 2.1%	(5) 3.4%	(2) 1.4%	(19) 13.0%
uncertain	-	(1) 0.7%	(24) 16.4%	(7) 4.8%	(1) 0.7%	(33) 22.6%
disagree	(1) 0.7%	-	(20) 13.7%	(50) 34.2%	(1) 0.7%	(72) 49.3%
strongly disagree	(1) 0.7%	(1) 0.7%	(3) 2.1%	(2) 1.4%	(13) 8.9%	(20) 13.7%
totals	(3) 2.1%	(11) 7.5%	(51) 34.9%	(64) 43.8%	(17) 11.6%	(146) 100.0%

Table 3. RESPONSES AS TO GRIZZLY BEAR POPULATION SIZE

<u>Lower U.S.:</u>			<u>Mission Mountains:</u>		
	<u>number</u>	<u>percent</u>		<u>number</u>	<u>percent</u>
under 800	29	18.8%	under 15	1	0.6%
800 to 1200 *	7	4.5%	16 to 32 *	28	18.2%
1201 & over	6	3.9%	33 & over	35	22.7%
don't know or no response	<u>112</u>	<u>72.8%</u>	don't know or no response	<u>90</u>	<u>58.5%</u>
	154	100.0%		154	100.0%

* range for the best scientific estimate of population size.

behavior is a danger sign. Eighty four percent of the respondents knew that the grizzly's best sense is smell.

Fifty six percent knew that they may expect to find grizzlies frequenting the valley in both spring and fall. Seventy five percent knew that their residence/property is within grizzly bear habitat. Sixty two percent agree that the Mission Valley contains habitat areas grizzly bears must use, and 56% recognize that all necessary grizzly habitat is not found on public lands.

In the interest of examining the residents' knowledge of grizzly bear habitat needs and behavior in relation to several other variables, a scaled, seven point score was developed (GBKNOw). One point per question was given for correct responses to the behavior and habitat questions of: "A grizzly's best sense is:"; "If a grizzly is standing on its hind legs with head up and ears forward, that behavior probably means:"; "If you were near a grizzly that was huffing and loudly clacking its teeth, that behavior probably means:"; "Is all the necessary grizzly bear habitat found on public lands?"; "Does the Mission Valley contain any habitat areas that grizzly bears must use?"; "Is your residence/property within grizzly bear habitat?"; and "What foods do grizzly bears eat?". For the foods question, identifying four or more of the six foods listed was counted as one point. The resulting GBKNOW scores were distributed between 0 and 7 points, with a mean of 4.88 ($n = 136$).

Scores on grizzly bear knowledge (GBKNOw), were found to have a positive association with the number of times grizzlies were encountered ($\rho = .315$), and a negative association with age ($r = -.232$). Years of education was slightly associated with GBKNOW ($\rho = .172$); the scores being higher for residents having more years of formal education. The average GBKNOW score for residents who had

seen grizzlies was 5.2, 1.0 point (14.3%) higher than the average for residents who hadn't seen grizzlies. The average GBKNOW score for Native Americans was 5.4, 0.8 points (11.4%) higher than the average score for Whites. Although grizzly knowledge was slightly higher among Native Americans, both races had the same average years of education and had the same average number of encounters with grizzlies. The average score for residents who were currently managing their property to allow for the maintenance and protection of grizzly habitat was 5.3, 0.7 points (10.0%) higher than the average for residents who were not managing for grizzly habitat. All of the above relationships were statistically significant at the .04 level or greater.

Attitude Components

This section presents residents' responses to the three component elements of attitude: cognitive (opinions, beliefs), affective (feelings, evaluations), and conative (behavioral intentions). Table 4 illustrates the distinctions between these component measures.

Table 4. ILLUSTRATIONS OF ATTITUDE COMPONENT MEASURES

Cognitive Component (opinions, beliefs)

Grizzly bears are in danger
of disappearing in the
Mission Mountains.



Grizzly bears are not in
danger of disappearing in
the Mission Mountains.

Affective Component (feelings, evaluations)

Overall, I like
grizzly bears.



Overall, I don't like
grizzly bears.

Conative Component (behavioral intention)

I would not kill a grizzly
bear if it were threaten-
ing me.



I would kill a grizzly
bear if it were threatening
me.

'Cognitive Component'

Fishbein and Ajzen (1975) state that beliefs about an object provide the basis for the formation of attitudes toward that object. They add that belief formation involves the establishment of a link between an object and an attribute. Three different processes may underlie belief formation: direct observation (descriptive), inference from some other belief (inferential), and source information (informational). Beliefs are therefore intertwined with knowledge. The external influx into beliefs being knowledge obtained from informational sources such as newspapers, schools, etc., and descriptive knowledge obtained from direct observation.

Twenty percent of the residents said the grizzly bear has some religious or cultural significance to them (RELIG). Race was relevant here, with a much greater likelihood of religious significance among Native Americans than among Whites.

Eighty nine percent of the residents said that having wildlife on their property added to or would add to their quality of life (WLQL). The average GBKNOW score for residents answering "yes" was 4.9, 1.1 points (15.7%) higher than residents who answered "no". The same question was restated with grizzly bear substituted for wildlife as, "Do

you feel having grizzly bears in the Mission area adds to your quality of life?" (GBQL). The yes response dropped to 55%, 32% said no, and 13% didn't know.

The following variables were found to be associated with GBQL: WLQL (wildlife adding to quality of life), GBKNOW (knowledge of grizzly bears), RELIG (religious or cultural significance), AGE, and RACE. Responding "yes" to WLQL was prerequisite to a "yes" response for GBQL. This finding affirms the work of Bart (1972) in which he indicates the existence of a hierarchy among attitudes towards animals, and asserts that "positive attitudes toward rare and endangered species implies positive attitudes toward a wide variety of animals" (Bart 1972, p. 6).

Residents answering "yes" to GBQL had an average GBKNOW score of 5.4, 1.3 points (18.6%) higher than the average score for residents answering "no". Residents who were younger were more likely to answer "yes" to GBQL. Both age and grizzly bear knowledge were statistically significant at <.01. "Yes" responses to RELIG showed chi square significance levels of .004 with "yes" responses to GBQL. A lower chi square of .068 significance was found between being Native American and answering favorably to GBQL. Two other observations regarding GBQL responses also warrant noting. First, the number of yes responses to GBQL doubled among residents who stated they had seen a grizzly bear,

over those who had seen only black bears or no bears at all. Additionally, of the residents who encountered a grizzly only once, 22% answered "don't know", 37% answered "no", and 41% answered "yes" to GBQL. As the number of encounters increased to several (6 or over), "don't know" dropped to 8%, "no" to 13%, and "yes" responses increased to 79%.

Residents were asked to express their beliefs on the following questions: "Grizzly bears are in danger of disappearing in the lower United States" (DISUS), "Grizzly bears are in danger of disappearing in the Mission Mountains" (DISMV), and "The disappearance of the grizzly bear cannot be avoided if human needs are to be met" (DISUNAV). Table 5 gives the frequency of responses for these questions. All of the questions were strongly associated with GBKNOW ($\rho = -.409, -.335$, and $.267$ respectfully). Residents with a higher GBKNOW score were more likely to respond in agreement to DISUS and DISMV, but respond in disagreement to DISUNAV. Residents who agreed that the grizzly was in danger of disappearing in the Missions disagreed to the statement that the grizzly's disappearance was unavoidable if human needs are to be met ($\rho = -.252$). Table 6 gives correlations and significance levels on all variables associated with DISUS, DISMV, and DISUNAV.

Table 5. RESPONSES TO SCALED BELIEF QUESTIONS (numbers in parentheses are n's)

	<u>strongly agree</u>	<u>agree</u>	<u>uncertain</u>	<u>disagree</u>	<u>strongly disagree</u>	<u>Totals</u>
Grizzly bears are in danger of disappearing in the lower United States.	(36) 24.3%	(42) 28.4%	(37) 25.0%	(27) 18.2%	(6) 4.1%	(148) 100%
Grizzly bears are in danger of disappearing in the Mission Mountains.	(27) 18.1%	(42) 28.2%	(31) 20.8%	(39) 26.2%	(10) 6.7%	(149) 100%
The disappearance of the grizzly bear cannot be avoided if human needs are to be met.	(5) 3.4%	(16) 10.9%	(21) 14.3%	(65) 44.2%	(40) 27.2%	(147) 100%

Table 6. DISAPPEARANCE OF THE GRIZZLY BEAR - ASSOCIATIONS (DISUS,
DISMV, and DISUNAV)
(Spearman's rho correlations with significance levels)

DISUS with DISMV	.756 n (146) sig .000	DISUS with DISUNAV	-.371 n (144) sig .000	DISMV with DISUNAV	-.252 n (146) sig .001
DISUS with GBKNOW	-.409 n (133) sig .000	DISMV with GBKNOW	-.335 n (136) sig .000	DISUNAV with GBKNOW	.207 n (135) sig .000
DISMV with CHILD	-.269 n (146) sig .001	DISMV with EDUC	-.246 n (146) sig .001	DISMV with AGE	.220 n (147) sig .004
DISUS with CHILD	-.215 n (145) sig .005	DISUS with EDUC	-.169 n (145) sig .021	DISMV with TIMES	-.193 n (100) sig .027
DISUNAV with AGE	-.361 n (145) sig .000	DISUNAV with YRSPROP	-.196 n (136) sig .011	DISMV with YRSPROP	.188 n (138) sig .014

note: all significance levels of .000 are .0005 or lower

DISUS: Grizzlies are in danger of disappearing in the lower U.S.

DISMV: Grizzlies are in danger of disappearing in the Missions.

DISUNAV: Disappearance of grizzlies can't be avoided if human needs are to be met.

GBKNOW: Seven point grizzly bear knowledge score.

CHILD: Size of area where childhood was spent.

EDUC: Years of formal school.

TIMES: Number of encounters with a grizzly.

YRSPROP: Years lived on present piece of property.

AGE: Years of age.

Residents who agreed to DISUS and DISMV were likely to: have more years of formal education, have grown up in a more populated area, and have spent less years in the Mission Valley. Conversely, residents responding in disagreement to DISMV were likely to be older and to have had fewer encounters with grizzlies. Residents responding in agreement to DISUNAV were most likely to be older, to have spent more years on their current piece of property, and to be White rather than Native American.

Table 7 illustrates residents' knowledge of agency grizzly bear management, and also shows their ratings of how well they believe each agency is doing. For the most part residents hold limited knowledge about the agencies that are actively managing grizzly bears, with those who are informed holding varying opinions of each agency's management plan.

'Affective Component'

As mentioned earlier, beliefs link an object to an attribute. Feelings, the affective component of attitude, are the individual's evaluation of these attributes. Thus feelings result from the summation of more than one belief, with some beliefs carrying more weight than others. This evaluative or affective nature is the distinguishing overall characteristic of attitude (Fishbein and Ajzen 1975).

Table 7. KNOWLEDGE ABOUT AND OPINIONS OF AGENCY MANAGEMENT (n = 154)

Have an active grizzly management plan? *		Opinion of each agency's grizzly bear management.						non-response
		very good	good	fair	poor	very poor	don't know	
Flathead Forest	no	-	2	9	5	4	52	62
	yes	-	2	6	2	-	10	
U.S. Fish & Wildlife Service	no	1	4	2	3	4	20	44
	yes	2	16	13	9	4	32	
Montana Fish, Wildlife & Parks	no	-	-	2	2	2	6	43
	yes	3	20	21	11	3	41	
Lake County	no	1	1	5	8	11	51	64
	yes	-	5	3	3	-	2	
C.S.K. Tribe and B.I.A.	no	-	-	-	2	4	4	36
	yes	12	19	25	11	10	31	

* The accurate response for Lake County is no, the remaining four have an active grizzly management plan.

note: the figures given represent the number of responses in each category, not percentages.

When residents were asked to express their feelings about the statement, "Overall, I like grizzly bears" (LIKEGB) 61% agreed, 27% disagreed, and 12% were uncertain. LIKEGB was strongly associated with: GBKNOW (knowledge about grizzly bears), DISUS and DISMV (grizzlies are in danger of disappearing in the U.S. and Missions), DISUNAV (disappearance of the grizzly is unavoidable if human needs are to be met), TIMES (number of encounters with grizzlies), and AGE (Table 8).

Table 8. LIKE THE GRIZZLY BEAR - ASSOCIATIONS (LIKEGB)
(Spearman's rho correlations with significance levels)

LIKEGB with GBKNOW	-.428 n (132) sig .000	LIKEGB with TIMES	-.279 n (96) sig .003	LIKEGB with AGE	.253 n (143) sig .001
LIKEGB with DISUS	.558 n (142) sig .000	LIKEGB with DISMV	.583 n (144) sig .000	LIKEGB with DISUNAV	-.374 n (143) sig .000

note: all significance levels of .000 are .0005 or lower

LIKEGB: Overall liking for the grizzly.

GBKNOW: Seven point grizzly bear knowledge score.

TIMES: Number of encounters with a grizzly.

DISUS: Grizzlies are in danger of disappearing in the lower U.S.

DISMV: Grizzlies are in danger of disappearing in the Missions.

DISUNAV: Disappearance of grizzlies can't be avoided if human needs are to be met.

AGE: Years of age.

Residents who had a higher GBKNOW score were more likely to agree than disagree to LIKEGB. Residents disagreeing to LIKEGB were most likely to: have disagreed with the statement that the grizzly is in danger of disappearing, agreed that the disappearance of the grizzly is unavoidable if human needs are to be met, have had less encounters with grizzlies, and have been older in age. They were also more likely to have been White than Native American.

The question, "Do you, or would you, feel comfortable having a grizzly bear near your property?" (COMFORT) received the following responses: 13% answered "all of the time", 24% "most of the time", 21% "sometimes", 34% "never", and 8% "uncertain". COMFORT was found to be highly associated with: DISUS and DISMV (grizzlies are in danger of disappearing in the U.S. and Missions), DISUNAV (disappearance of the grizzly is unavoidable if human needs are to be met), LIKEGB (like grizzlies), GBKNOW (knowledge about grizzly bears), TIMES (number of encounters with grizzlies), and AGE (see Table 9 for correlations and significance levels). Residents who felt most comfortable near a grizzly were more likely to agree that the animal is in danger of disappearing, but disagree with its disappearance being unavoidable. They agreed to liking the grizzly, and they held more knowledge of the animal's

Table 9. COMFORT WITH GRIZZLY BEAR NEAR - ASSOCIATIONS (COMFORT)
(Spearman's rho correlations with significance levels)

COMFORT with n (131) DISUS sig .000	COMFORT with n (132) DISMV sig .000	COMFORT with n (130) DISUNAV sig .000
COMFORT with n (129) LIKEGB sig .000	COMFORT with n (130) WLCONT sig .018	COMFORT with n (92) TIMES sig .000
COMFORT with n (133) AGE sig .004	COMFORT with n (122) GBKNOW sig .000	

note: all significance levels of .000 are .0005 or lower

COMFORT: Comfortable having a grizzly bear near.

LIKEGB: Overall liking for the grizzly.

DISUS: Grizzlies are in danger of disappearing in the lower U.S.

DISMV: Grizzlies are in danger of disappearing in the Missions.

DISUNAV: Disappearance of the grizzlies can't be avoided if human needs are to be met.

GBKNOW: Seven point grizzly bear knowledge score.

TIMES: Number of encounters with a grizzly.

AGE: Years of age.

WLCONT: Come in contact with wildlife on the job.

behavior and needs. Comfort level increased among those individuals who had seen a grizzly over those who had not seen one. Comfort level also increased with increased grizzly bear encounters, and younger residents reported feeling more comfortable than older residents. Additionally, residents who came in contact with wildlife on the job (WLCONT) were more likely to state that they would feel comfortable near a grizzly.

COMFORT also showed a relationship to two other elements: if a resident had had a problem with grizzly bears on their property, and whether or not the resident experienced an encounter with a grizzly on his/her property. For residents who stated they had had a grizzly problem, the occurrence of the "never feeling comfortable" response was higher than for the rest of the population as a whole. Residents who had experienced encounters with grizzlies on private property showed an 8% increase in their COMFORT response of "all of the time" as compared to the rest of the population.

Table 10 shows the response frequencies for the questions, "What should be done with grizzly bear numbers in the lower U.S. (DONEUS), and in the Mission Mountains (DONEMV)?". Responses to DONEUS and DONEMV are highly associated with each other, with GBKNOW (knowledge about grizzly bears), with DISUS and DISMV (grizzlies are in

danger of disappearing in the U.S. and Missions), with DISUNAV (disappearance is unavoidable if human needs are to be met), with LIKEGB (like grizzlies), and with COMFORT (feel comfortable with grizzly near). Table 11 gives correlations and significance levels for these associations. Residents stating that grizzly numbers should be "decreased" or "gotten rid of" were likely to: hold a lower knowledge of grizzly habitat needs and behavior, disagree that grizzlies are in danger of disappearing, agree that the disappearance of the grizzly can not be avoided if human needs are to be met, disagree to the statement of liking the grizzly, and feel less comfortable near grizzlies.

Additionally, they were likely to have: been White, been .

Table 10. RESPONSES TO WHAT SHOULD BE DONE WITH GRIZZLY BEARS

	<u>Lower U.S.</u>		<u>Mission Mountains</u>	
	<u>number</u>	<u>percent</u>	<u>number</u>	<u>percent</u>
Get rid of	6	3.9%	9	5.8%
Decrease numbers	11	7.1%	16	10.4%
Leave as is	72	46.8%	69	44.8%
Increase numbers	38	24.7%	36	23.4%
Don't know or no response	<u>27</u>	<u>17.5%</u>	<u>24</u>	<u>15.6%</u>
	154	100.0%	154	100.0%

Table 11. DONE WITH GRIZZLY BEARS -ASSOCIATIONS (DONEUS and DONEMV)
(Spearman's rho correlations with significance levels)

DONEUS with n (125) DONEMV sig .000	DONEUS with n (123) LIKEGB sig .000	DONEUS with n (115) COMFORT sig .000
DONEUS with n (127) DISUS sig .000	DONEUS with n (124) DISUNAV sig .000	DONEUS with n (113) GBKNOW sig .000
DONEUS with n (125) AGE sig .001	DONEUS with n (119) YRSPROP sig .007	DONEUS with n (126) EDUC sig .011
DONEUS with n (125) CHILD sig .029		
DONEMV with n (126) LIKEGB sig .000	DONEMV with n (118) COMFORT sig .000	DONEMV with n (128) DISMV sig .000
DONEMV with n (116) GBKNOW sig .000	DONEMV with n (127) DISUNAV sig .000	DONEMV with n (61) GEMV sig .008
DONEMV with n (129) AGE sig .000	DONEMV with n (122) YRSPROP sig .006	DONEMV with n (130) EDUC sig .003
DONEMV with n (129) CHILD sig .006	DONEMV with n (88) TIMES sig .025	

note: all significance levels of .000 are .0005 or lower

DONEUS: What to do with grizzlies in the lower U.S.

DONEMV: What to do with grizzlies in the Missions.

LIKEGB: Overall liking for the grizzly.

COMFORT: Comfortable having a grizzly bear near.

GBKNOW: Seven point grizzly bear knowledge score.

(continued)

Table 11. DONE WITH GRIZZLY BEARS (continued)

DISUS: Grizzlies are in danger of disappearing in the lower U.S.

DISMV: Grizzlies are in danger of disappearing in the Missions.

DISUNAV: Disappearance of grizzlies can't be avoided if human needs are to be met.

GBMV: Resident's statement of Mission grizzly population size.

AGE: Years of age.

EDUC: Years of formal school.

CHILD: Size of area where childhood was spent.

YRSPROP: Years lived on present piece of property.

TIMES: Number of encounters with a grizzly.

older, been less educated, been raised in a small population center, spent many years on their property, and overstated the number of grizzlies living in the Missions.

Of residents who had seen bears, those who reported seeing a grizzly were somewhat more likely to offer an "increase numbers" response to DONEMV, as compared to residents who had seen black bears or were unsure of the type of bear seen. This positive position demonstrated a stronger association whenever the number of encounters with a grizzly increased. However, if residents stated they had had a problem with grizzly bears on their property, they were more likely to respond negatively to DONEMV (refer back

to Table 1).

When the question of what should be done with grizzly bears in the Missions (DONEMV) was crosstabulated with the question, "Should local citizens take part in this action?", the results showed that residents who responded "increase numbers" for DONEMV were more likely to feel that local citizens should be taking part in these efforts than did residents in general.

Opinions regarding the action that agencies as a whole should take on grizzly bear management issues are shown in Table 12. The two issues of highest concern to the population were "educating people about grizzlies" and "investigating complaints". An attempt was made to identify any distinguishing characteristics of the residents who indicated a need for an increase in the investigation of complaints (INVESTAC). None of the following were found to affect the response: neighbors having grizzlies on their property, neighbors having problems with grizzlies on their property, the resident having grizzlies on his/her property, the resident having had a problem with grizzly bears on his/her property, knowledge of grizzly bear habitat needs and behavior, years living in the Mission Valley, belief about the grizzly adding to their quality of life, sex, age, race, or number of encounters with the grizzly. However, the characteristics which identified this group were: less

Table 12. ACTION AGENCIES SHOULD TAKE ON GRIZZLY MANAGEMENT ISSUES (numbers in parentheses are n's)

	<u>greatly increase</u>	<u>increase</u>	<u>remain same</u>	<u>decrease</u>	<u>greatly decrease</u>	<u>don't know/no response</u>
Bear research	(20) 13.0%	(37) 24.0%	(33) 21.4%	(14) 9.1%	(5) 3.2%	(45) 29.3%
Hunting take of grizzlies	(4) 2.6%	(16) 10.4%	(38) 24.7%	(24) 15.6%	(33) 21.4%	(39) 25.3%
Relocating problem bears	(34) 22.1%	(34) 22.1%	(36) 23.4%	(5) 3.2%	(13) 8.4%	(32) 20.8%
Killing problem bears	(34) 22.1%	(23) 14.9%	(43) 27.9%	(14) 9.1%	(15) 9.7%	(25) 16.3%
Educating people about grizzly bears	(60) 39.0%	(53) 34.4%	(15) 9.7%	(1) 0.6%	(1) 0.6%	(24) 15.7%
Investigating complaints	(43) 27.9%	(61) 39.6%	(18) 11.7%	(1) 0.6%	(0) -	(31) 20.2%
Closing areas heavily used by grizzlies from Man	(33) 21.4%	(40) 26.0%	(40) 26.0%	(6) 3.9%	(9) 5.8%	(26) 16.9%
Fines for killing grizzlies	(44) 28.6%	(21) 13.6%	(22) 14.3%	(13) 8.4%	(19) 12.3%	(35) 22.8%
Identifying & protecting habitat on public lands	(32) 20.8%	(37) 24.0%	(39) 25.3%	(9) 5.8%	(7) 4.5%	(30) 19.6%
Identifying & protecting habitat on private lands	(25) 16.2%	(32) 20.8%	(30) 19.5%	(14) 9.1%	(19) 12.3%	(34) 22.1%

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(continued)

Table 12. ACTION AGENCIES SHOULD TAKE ON GRIZZLY MANAGEMENT ISSUES (continued)

	<u>greatly increase</u>	<u>increase</u>	<u>remain same</u>	<u>decrease</u>	<u>greatly decrease</u>	<u>don't know/ no response</u>
Government purchase of key habitat	(28) 18.2%	(31) 20.1%	(27) 17.5%	(8) 5.2%	(18) 11.7%	(42) 27.3%

* all row totals equal 154 in number and 100%.

years of formal education as well as a lower level of comfort with having grizzlies near.

Race proved to be significant for several of the grizzly bear management issues. Native Americans were more likely than Whites to respond on the increase side to the issues of: educating people about grizzly bears, closing areas heavily used by grizzlies from Man, fines for killing grizzlies, and identifying and protecting habitat on public and private lands. Native Americans were also more likely to feel that the killing of problem bears and the hunting take of grizzlies should be decreased.

'Conative Component'

The conative component refers to an individual's behavioral intentions, or in other words, the individual's predilection to perform various behaviors. Intentions may be viewed as a modified form of beliefs, where the object is the individual themselves and the attribute is the form of behavior. However, behavioral intentions differ in that they incorporate the preceding cognitive and affective components of attitude (beliefs and feelings). Stated behavioral intentions represent the closest measure of action, short of actual overt behavior (Fishbein and Ajzen 1975). Present in any overt behavioral response is the balancing of attitude toward the object and attitude toward the situation (Rokeach

1980). Thus it is important that any measure of behavioral intention be made within the context of specific situational examples.

Table 13 gives frequencies on responses to the question, "Would you be encouraged to protect grizzly bear habitat on your property if: (check 3 most important)". The most frequent responses to this question were: receiving rapid assistance for grizzly problems (76%), feeling safe (43%), receiving payments for livestock losses (42%), and getting more information on "how-to" (38%).

Residents were asked, "If you needed assistance for a grizzly bear problem, who would you call? (check up to 3)". Of those calls that would be made: 68% of the respondents said they would call the Tribal Game Warden, 45% the Department of Fish, Wildlife, and Parks, 28% the Tribal Dispatch, 24% the BIA, 23% the U.S. Fish and Wildlife Service, 18% the County Sheriff, 12% would call a neighbor, and 10% would call no one.

The question was asked, "Would you consider killing a grizzly?" and "Under what conditions? (check all that apply)". Protection of self and family was the primary response (98%). Table 14 gives the frequency of responses for the conditions listed.

Table 13. INDUCEMENTS TO PROTECT GRIZZLY BEAR HABITAT ON PRIVATE PROPERTY (n = 132)

<u>Would be encouraged to protect habitat if:</u>	<u>number</u>	<u>percent</u>
Habitat protection raised property value	12	10.6%
Tax incentives were available	22	19.5%
More information was available on "How-to"	43	38.1%
Received payments for livestock losses	47	41.6%
Received rapid assistance if problems with grizzly arose	86	76.1%
Felt safe having grizzly bears near	49	43.4%
Other	<u>11</u>	<u>9.7%</u>
	270	**

** The percent for each item represents the portion of all respondents answering "yes" to the condition stated, therefore percents are not additive to 100%.

Table 14. WHEN RESIDENTS WOULD CONSIDER KILLING A GRIZZLY (n = 132)

<u>Would kill a grizzly if:</u>	<u>number</u>	<u>percent</u>
On the property	9	6.8%
Damaging fences, pens, equipment, etc.	18	13.6%
Damaging gardens, crops, feed stores, etc.	18	13.6%
Threatening livestock	36	27.3%
Killing livestock	67	50.8%
Threatening self or family member	<u>129</u>	<u>97.7%</u>
	277	**

** The percent for each item represents the portion of all respondents answering "yes" to the condition stated, therefore percents are not additive to 100%.

To obtain a measure of residents' behavioral intentions toward killing a grizzly bear, the variable WILLKILL was computed. WILLKILL represents the scaled score from 0 to 6 obtained by tallying the number of "yes" responses to the list of conditions in the above question. The median score for WILLKILL was one.

WILLKILL showed a high association with: LIKEGB (like grizzlies), DISUS and DISMV (grizzlies are in danger of disappearing in the U.S. and Missions), DONEMV (what should be done with grizzlies in the Missions), COMFORT (feel comfortable near a grizzly), and DISUNAV (disappearance of the grizzly is unavoidable if human needs are to be met). It was also associated with GBKNOW (knowledge about grizzly bears), AGE, CHILD (population size of place of childhood residency), and INVESTAC (investigating complaints). Table 15 lists correlations and significance levels for these associations. Residents with high WILLKILL scores (negative behavioral intentions) were most likely to: disagree to liking the grizzly, disagree that the animal is in danger of disappearing, feel that grizzly numbers should be lowered, feel uncomfortable near a grizzly, and agree that the disappearance of the animal cannot be avoided. In addition, they were likely to: have a lower knowledge of grizzly habitat needs and behavior, be older, have grown up in a

Table 15. WILLINGNESS TO KILL GRIZZLY BEARS - ASSOCIATIONS (WILLKILL)
(Spearman's rho correlations with significance levels)

WILLKILL with COMFORT	.395 n (116) sig .000	WILLKILL with DONEMV	-.412 n (115) sig .000	WILLKILL with INVESTAC	-.163 n (110) sig .045
WILLKILL with DISUS	.452 n (129) sig .000	WILLKILL with DISMV	.449 n (130) sig .000	WILLKILL with DISUNAV	-.330 n (130) sig .000
WILLKILL with LIKEGB	.517 n (127) sig .000	WILLKILL with CHILD	-.191 n (130) sig .015	WILLKILL with GBKROW*	-.269 n (121) sig .001
WILLKILL with AGE*	.214 n (130) sig .007				

note: all significance levels of .000 are .0005 or lower

* Pearson's r correlations

WILLKILL: Six point score representing willingness to kill a grizzly.

LIKEGB: Overall liking for the grizzly.

COMFORT: Comfortable having a grizzly bear near.

DISUS: Grizzlies are in danger of disappearing in the lower U.S.

DISMV: Grizzlies are in danger of disappearing in the Missions.

DISUNAV: Disappearance of the grizzlies can't be avoided if human needs are to be met.

DONEMV: What to do with grizzlies in the Missions.

GBKROW: Seven point grizzly bear knowledge score.

AGE: Years of age.

CHILD: Size of area where childhood was spent.

INVESTAC: Investigating complaints action.

less populated area, be White, have never seen a grizzly, and have felt that the investigation of complaints should increase (Table 16).

Table 16. RESPONSES AND CHARACTERISTICS ASSOCIATED WITH WILLINGNESS TO KILL GRIZZLIES

	<u>Residents most likely to kill grizzlies</u>	<u>Residents least likely to kill grizzlies</u>
Like grizzlies:	strongly disagree	strongly agree
Grizzlies are in danger of disappearing:	strongly disagree	strongly agree
What to do with Mission grizzlies:	get rid of	increase numbers
Comfort with a grizzly near:	never	all the time
Disappearance of grizzlies is unavoidable if human needs are to be met:	strongly agree	strongly disagree
Knowledge score about grizzly habitat needs and behavior:	low	high
Age:	older	younger
Size of area where childhood was spent:	rural	large city
Investigation of complaints:	greatly increase	remain same
Race:	White	Native American
Saw a grizzly:	no	yes

Chapter 4

RESULTS SUMMARY

Review of the Attitude Model

In the attitude model, behavior is represented as the culmination of many factors. It begins with the internalized characteristics of the individual. These internalized characteristics represent both static and dynamic variables. In the study results, the internalized variables most associated with grizzly bear attitudes were age, race, education, and population size of childhood residency.

For the purpose of this discussion two characteristics that are considered internalized, yet are highly dynamic variables, have been separated out to demonstrate their active role in attitude formation. These variables are knowledge and experience. As represented in the model, they refer to knowledge about grizzly bears and experiences with grizzly bears. According to Fishbein and Ajzen (1975) beliefs, as the foundation of attitude, are intertwined with knowledge through the three processes of source information (informational), inference from other beliefs (inferential), and direct observation (descriptive). Knowledge is thus represented as a feedback cycle in the formation of beliefs and the updating of internalized characteristics.

Knowledge from experience enters the model at the descriptive position. Experience represents the purest, most direct form of learning. Its differential characteristics include vivid memory storage, empathy, and a clearer and more persistent focusing of attitude. Increased repetitions of an experience, i.e., an encounter with a grizzly, leads to a focusing of attitude with the likelihood of guided and consistent future behavior (Fazio and Zanna 1981). A major point to be noted here is that once an attitude has been solidly formed from repeated experiences (be those experiences and the subsequent attitude positive or negative), that attitude is highly resistant to counter-influence.

The validity of the relationship between experience, knowledge, and attitude is confirmed in these study results. Several experience variables were found to be associated with the scaled measure of grizzly knowledge (GBKNOw), and the measures of the cognitive and affective components of attitude. The experience variables most often associating with the component measures of attitude were the number of encounters with a grizzly (TIMES), having seen a grizzly bear (GBEAR), and having had a problem on your property caused by a grizzly (PROB). Having contact with wildlife on the job (WLCONT) also showed a relationship.

GBKNOW shows strong associations with all attitude component measures (cognitive, affective, and conative). Thus it can be said that GBKNOW actively influences the formation of an individual's general attitude (learned predisposition to respond in a consistently favorable or unfavorable manner) with respect to the grizzly.

Continuing with the model, the cognitive (beliefs, opinions), affective (feelings, evaluations), and conative (behavioral intention) component classes are viewed as alternative measures of the encompassing dimension: attitude. However, each component holds a different position in relation to the attitude formation process and the final behavioral action. Beliefs, as mentioned earlier, are the foundation blocks of attitude. Based on knowledge, they link objects to attributes. These attributes are then evaluated and weighed in the expression of feelings about the object. Once feelings have been formulated, they then influence both future beliefs and behavioral intentions, i.e., they "color" perceptions. Behavioral intentions are influenced by beliefs and feelings while representing a measurable form of potential behavior. If properly measured, intentions are viewed as the immediate antecedents of corresponding overt behavior (Fishbein and Ajzen 1975).

All of the belief, feeling, and behavioral intention component measures reflect strong associations within each grouping and between the three groups, thus demonstrating the "networking" of attitude formation. The cognitive measures (DISUS, DISMV, and DISUNAV) display inter-component correlation levels of up to .602 with the affective measures (LIKEGB, DONEUS, DONEMV, and COMFORT). Intra-component correlations for the affective measures range higher from .550 to .750, while the conative measure (WILLKILL) shows correlations ranging up to .517 with the cognative and affective components. Also, as mentioned earlier, the internalized variables (age, race, education, and population size of childhood residence), experience variables (GBEAR, PROB, and TIMES), and knowledge (GBKNOw) display strong associations with the attitude measures.

Before concluding this discussion of the attitude model, it must be reiterated that the attitude-behavior link is not a pure one. Both attitude and behavior are greatly influenced by, what this model calls, external environmental variables. These variables influence both the individual's stated behavioral intention and actual overt behavior. They consist of such items as: normative prescriptions of proper behavior, restrictions on and consequences of various acts, point-in-time alternatives, the cultural and political environment of the geographic region, and the encompassing

influence of the movements of the times (recession, inflation, world hunger, potential for war, etc.). These variables are viewed as external to the characteristics and influence of the individual (Fishbein and Ajzen 1975, Labaw 1980). The quantitative extent of their influence is unknown, however, any interpretation of results should be undertaken within the context of these structures. Current external environmental factors relevant to the Mission Valley resident population include: the historical influence of the mixing of cultures; the restrictions on activities under the FIRGBMP; the power structure of a tribal governing body; fluctuations in agricultural market prices, as well as long-term trends; the social structure of a rural atmosphere; awareness of current land management alternatives; etc.

Review of the Study Hypotheses

Reviewing the hypotheses presented earlier in the theoretical framework, it can be said that all, with the exception of the occupation hypothesis, were supported. Findings showed that positive attitudes were associated with: Native Americans, the bear as a cultural/religious symbol, the young, the higher educated, and increased encounters with grizzlies. Also, regarding encounters, grizzly bear knowledge did increase with the number of

encounters and negative attitudes did appear among residents having problems with grizzlies on their property. The occupation hypothesis was dropped because of insufficient variability among the responses to afford adequate testing.

Chapter 5

DISCUSSION

The Endangered Species Act, as a legislative mandate for the protection of threatened and endangered species, places a burden of personal responsibility on Americans who live within or near occupied grizzly habitat. Preserving species not only means taking care not to harm individual animals, but also requires that the habitat on which an animal depends for survival be maintained. Large animals such as the grizzly require a large area of habitat to assure their survival. Their habitat needs often place them in direct competition with Man. When preserving a species that is a top predator, or one that can and sometimes does harm humans, the issues of habitat maintenance and human tolerance become exceptionally complex.

For grizzly bear populations to receive adequate protection on privately owned lands, residents must be actively helped in dealing with the sacrifices the Nation is asking them to make. The burdens local residents must bear are psychological (fear for the safety of family and self), financial (property damage from grizzly activity), and loss of property freedom and revenue (for the definitive preservation of habitat).

Due to "market failure", rewards are lacking for the preservation of wildlife habitat on private lands (Bishop 1981, Schoenfeld and Griffin 1981). Thus, bridging the stewardship gap on these lands means addressing a complex, intertwining "network" of problems. Understandably, any progress toward habitat protection must likewise apply a multi-faceted approach that incorporates potential solutions directed at all the needs of the discrete "publics". Additionally, the effort must be all inclusive and, once begun, should be consistently carried through. The public must be actively involved in grizzly bear preservation efforts so that the issue will hold high saliency to them, and so that they will be assured a feeling of personal control. Both these elements are essential to voluntary compliance programs (Citizen Participation Handbook 1981, Dumke et al. 1981).

What are the needs of the residents? The residents themselves have stated that they perceive a need for more education of the public regarding grizzly bears, and a need for the increased investigation of complaints when grizzly problems occur. The need in these areas is confirmed in these study results.

Regarding education, a review of responses to grizzly knowledge questions reveals numerous deficiencies. The data on longevity of residency in the Mission Valley shows that inhabitants have spent a considerable length of time in the area. Considering the intense grizzly bear activity here and the residents daily proximity to the animal, they demonstrate surprisingly little knowledge of this imposing animal. Also significant here is the fact that the level of knowledge about grizzly bears (GBKNOW) is highly associated with what was believed should be done with grizzlies in the Missions (DONEMV), whether the animal was liked (LIKEGB), level of comfort near the animal (COMFORT), and the behavioral intention score (WILLKILL). Some residents even stated that they would be encouraged to protect grizzly habitat if only they had more information regarding "how-to".

A closer examination of the amount and the accuracy of residents' knowledge about grizzly bears demonstrates this problem. One knowledge response directly associated with residents' feelings regarding what should be done with grizzly bears in the Mission Valley, was the resident's awareness of how many grizzlies are living in the Missions (GBMV). Reviewing the frequencies for this question reveals only a small proportion of the population (18%), who could offer an accurate response. Given this limited number of

residents who are aware of the actual grizzly population size, it seems illogical to assume that the Valley residents in general can fully appreciate the grizzly's plight.

When examining the responses to the grizzly behavior questions, another startling discovery is found. Almost 40% of the residents were unaware that a grizzly's huffing and teeth clacking behavior is a danger sign. In an area so highly frequented by grizzly activity, everyone's safety, both Man and grizzly would be better served if residents knew more about the grizzly's "language".

Also, resident's fear of the grizzly appears to be strong. For residents who have seen the animal, and have seen it several times, comfort level increases. This increased comfort probably is a result of direct knowledge about the animal obtained from the encounter, as well as the activation of the individual's empathy response. The individual's interaction with the grizzly during an encounter can to a great extent influence the animal's actions, thus leading to a safe or unsafe experience. This experience will then result in a reflection on their attitude.

Having a negative experience such as a problem with a grizzly bear on the property results in negative feelings toward the animal, and can negatively influence future

behavioral actions by the individual. In the interest of circumventing this adverse cycle, help should be directed toward overcoming undue fears and increasing comfort level. A quicker game warden response to the investigation of a complaint would act as a substantial deterrent to this problem. Given the relationship of an "increase" response for the investigation of complaints to comfort level and willingness to kill a grizzly, it seems obvious that quicker response times would have significant benefits.

Understanding the needs and behavior of the grizzly bear is a prerequisite to furthering human respect for the animal. As a first step toward addressing the above mentioned problems, residents need to obtain a clear and concise level of knowledge about the grizzly. In this regard, ALL information is of value. Behavioral information about the bear, habitat use, bear activity, population dynamics, current agency management efforts, history of the animal, etc., are all vital links to the residents' understanding of the animal's needs. There is a strong base of support for the grizzly in the Mission Valley. The majority of residents like bears and wish to aid them, but lack the information on how. This foundation can be very easily provided to them.

A specific suggestion for the study area itself would be a mail campaign effort. Residents in the high grizzly bear use area could be sent bulletins about grizzlies. The bulletins could include information on the topics mentioned above, as well as a statement of current agency bear management activities, a "Valley Sightings Report" of bear activity (to familiarize residents with seasonal use patterns and interest them in bear watching), and a public forum for bear problems discussion. Most importantly, these bulletins could provide dates and times of community input meetings, where agency personnel and residents could get together in a workshop atmosphere to discuss the issues of grizzly bear preservation and habitat protection.

Establishing a two-way flow of communication marks the start of a successful public involvement effort (Schoenfeld and Griffin 1981, Ramsey and Shult 1981). That communication should be based on promoting understanding (Fazio and Gilbert 1981), by building on what the differentiated "publics" know and moving at their pace (Ramsey and Shult 1981). Community discussions will be more effective than lectures or individual instruction because opinions are voiced as a function of the community's particular situation (Lumsden 1957), with the community discovering for itself what is in its best interest (Fessler 1976). Individual participants should also be helped with

assessing their land management objectives (Giles 1981) for the identification of alternative measures available to meet their specific land management needs (Bishop 1981).

Getting residents into the mainstream of grizzly bear preservation efforts is a necessity. Instilling a respect for the grizzly and allowing people the pride that comes from taking an active part in the animal's future could be the determining factor in the grizzly's survival. Promoting understanding is the first step. By sharing the knowledge that agency staff and researchers have, residents can come to know the grizzly better. Through this increased understanding and the building of interest, resident cooperation and involvement can be cultivated to deal with the tough problems of grizzly habitat preservation.

Due to the unique cultural nature of the study location, one further point should be raised. The results have shown that there exists a significant difference in attitudes toward grizzly bears among the two races, Native American and White. As stated in the introduction, these differences in attitude are most likely founded in the cultural/religious teachings of each race. Given that these cultural/religious differences exist, and that they influence attitude, the issue of sovereign power should be reexamined.

The Confederated Salish and Kootenai Tribe, as a sovereign nation, retains the right to govern within its reservation boundaries. That right can be used as the Tribal Council deems fit, within the limitations previously mentioned. The Indians participating in this study expressed their concern for the needs of the grizzly. It would seem that if, in responding to their constituencies wishes, the Tribal Council were to pass ordinances and guidelines to permanently protect grizzly bear habitat in heavy use areas from future development, that those ordinances would most likely be upheld in the courts. This action, were it to occur, would place the Confederated Salish and Kootenai Tribe at the threshold in efforts to protect threatened and endangered species on reservation lands. It would also be a demonstration to the nation of their bond with nature and their resolve to preserve that which is still wild. However, legislatively protecting grizzly habitat would best be held as a last resort, following an extensive public involvement process promoting voluntary compliance. If at the end of such a process, the community itself recognizes that zoning is a necessity, the legislative action would then have a broader base of support and a higher likelihood of success.

Chapter 6

CONCLUSIONS

Active public involvement is the element lacking in current grizzly bear preservation efforts on private lands. In Western Montana, all of the three grizzly bear ecosystems designated as "recoverable" by the U. S. Fish and Wildlife Service's Grizzly Bear Recovery Plan are fringed by private landholdings. The majority of the landholdings contain habitat that is seasonally frequented and is often crucial to the metabolic needs of the grizzlies in these ecosystems. The efforts of agency professionals at managing federal landholdings for the preservation of grizzlies have been diligent, but have essentially ignored the import of the contiguous private lands to the animal's needs. Nurturing the active involvement of resident landholders is a necessity, to obtain a holistic protection of grizzly habitat on private, as well as federal, lands.

As presented, the soliciting of resident involvement should start with an investigation of the particular "publics" needs. As, only from there can a thorough understanding of the residents' position be obtained for effective public participation.

This study was in essence an exploratory, pilot venture. The questionnaire's broad scope has served its purpose in identifying a wide range of variables influential to attitude about grizzly bears. Further studies could be modified, using relevant variables and discarding non-relevant ones, to focus directly and more in depth on the elements and issues pertinent to the investigator's needs. Obtaining a better understanding of the concept of comfort, and how it interrelates and affects attitudes toward the grizzly would seem a productive focus for future investigations. Also, a before and after study on the effectiveness of various types of information on attitude change would be valuable. This study's approach is versatile and applicable to future grizzly bear public involvement efforts, as well as to other wildlife protection issues.

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APPENDIX

LIVING WITH THE GRIZZLY BEAR QUESTIONNAIRE

LIVING WITH THE GRIZZLY BEAR

This questionnaire should be completed by the head of the household.

You have been selected, from Mission valley residents, to take part in a public survey asking questions about grizzly bears. Since grizzly bears live in a portion of the Mission valley, Man/bear encounters are frequent. These encounters have been both favorable and unfavorable to local residents. Feelings are mixed about this animal and often emotions run high if property losses occur.

The agencies sponsoring this survey; the U.S. Fish & Wildlife Service, and the Confederated Salish & Kootenai Tribes with the Flathead Bureau of Indian Affairs are interested in hearing your opinions. What are your thoughts and feelings about grizzly bears? What experiences have you had with this animal? Would you like to see the management of grizzly bears improved? This questionnaire offers you an opportunity to tell these agencies what you think and guide them in an informed direction on future grizzly bear management actions.

Please take some time to participate. Your input is critical to the accurate representation of where your community stands on this issue. Your honest and straightforward responses are welcome. No individual answers will be divulged to anyone. All answers are confidential (DO NOT write your name on the questionnaire). Answers from questionnaires will be analyzed and following analysis, a brief summary of the overall community opinion will be mailed to all interested respondents. Thank you for your time and interest. Your response by _____ is greatly appreciated.

1. What is your sex? Female Male
2. Your age? _____ years
3. How many people live in your household, including yourself _____ number
How many are in each of the following age groups? (total * in each)
number of people in household: under 19 _____ 19 to 59 _____ 60 or over _____
4. What is the highest year of school you have completed? (circle)

Elementary	High School	College
1 2 3 4 5 6 7 8	9 10 11 12	13 14 15 16 17 more
5. Your ethnic group is:
 Native American/Indian
 White/Caucasian
 Other (Hispanic, Black, Asian, etc.)
6. What is the size of the area where you spent most of your childhood? (check only one)

<input type="checkbox"/> Rural Area (farm or ranch)	<input type="checkbox"/> Small Town (under 1,000 population)
<input type="checkbox"/> Large Town (1,000 - 5,000 population)	<input type="checkbox"/> Small City (5,000 - 50,000 population)
<input type="checkbox"/> Medium City (50,000 - 1 million population)	<input type="checkbox"/> Large City (over 1 million population)
7. How many years have you lived in Western Montana? _____ years
8. How many generations of your family have lived in Western Montana?
 I'm the first Two Three Four Five +
9. How many years have you lived in the Mission area? _____ years
10. Do you own or rent your property? Own → What type? Fee Trust/Allotted
How long have you lived here? _____ years
11. What is your principal occupation?
a. Check the group your occupation fits in. (check only one)

<input type="checkbox"/> Housewife	<input type="checkbox"/> Laborer, mechanic or machine operator
<input type="checkbox"/> Farm laborer or ranch hand	<input type="checkbox"/> Food service, clerical, sales, cleaning/maintenance
<input type="checkbox"/> Logger	<input type="checkbox"/> Real Estate
<input type="checkbox"/> Professional (doctor, nurse, trained technician, etc.)	<input type="checkbox"/> Rancher
<input type="checkbox"/> Farmer	<input type="checkbox"/> Outfitter/guide
<input type="checkbox"/> Student	<input type="checkbox"/> Retired, specify past career: _____
<input type="checkbox"/> Unemployed, specify occupation: _____	
<input type="checkbox"/> Other: specify _____	
- b. Does your job bring you in contact with wildlife? (check one)
 Always Often Sometimes Never
12. What are your sources of general information? (check 3 most important)

<input type="checkbox"/> Local Newspaper	<input type="checkbox"/> Tribal Newspaper
<input type="checkbox"/> Television	<input type="checkbox"/> Radio
<input type="checkbox"/> Magazines	<input type="checkbox"/> Books
<input type="checkbox"/> Friends/Neighbors	<input type="checkbox"/> Informational Lectures/Classes
<input type="checkbox"/> Agency Professionals (for example: county extension agent, wildlife managers, etc.)	

13. Are you a member of any organizations or clubs?

No (GO TO QUESTION #14)

Yes → a. What types of clubs? (check all that apply)

- Civic
- Social
- Political
- Religious
- Recreational (hunting, fishing, hiking, etc.)
- Conservation/Environmental
- Business related
- Other, specify: _____

b. Are you an active member (hold office, serve on committees, write letters, etc.)

Yes

No

14. Which activities do you participate in regularly? (check all that apply)

- Hunting
- Fishing
- Trapping
- Hiking (day-trip)
- Backpacking (overnight trip)

- Horseback ride (day-trip)
- Horseback ride (overnight trip)
- Berrying, Wood-gathering
- Nature Study (photography, birdwatching, etc.)

15. Do you have any of these animals on your property? (check all that apply)

- Fur bearing animals (fox, mink, etc.)
- Small Livestock/Poultry (pigs, sheep, goats, chickens, etc.)
- Large Livestock (cattle, horses, etc.)
- Occasional Large Wildlife (deer, elk, coyote, bears, etc.)
- Pets

16. Do you feel having wildlife on your property adds to, or would add to, your quality of life?

Yes

No

17. Do you actively manage your property in a manner that is beneficial to wildlife?

No (GO TO QUESTION #18)

Yes → a. What animals do you manage for? _____
b. What are you doing? _____

18. Do you have limitations or problems managing your property for the benefit of wildlife?

No (GO TO QUESTION #19)

Yes → What are the problems? (check 3 most important)

- Lack of time
- Lack of money
- Conflict of land uses
- Conflicts with wildlife
- Property size is too small
- No monetary profits from it
- Need information on how
- Need cooperation from agencies
- Other, specify: _____

19. Do your local friends/neighbors manage their property for the benefit of wildlife?

Yes

No

Some do

Don't know

THE FOLLOWING QUESTIONS ASK FOR YOUR OPINIONS AND EXPERIENCE WITH GRIZZLY BEARS ON OR NEAR YOUR PROPERTY. FOR CLARITY, THE USE OF THE TERM "HABITAT" REFERS TO PLACES THAT ARE USED BY AN ANIMAL TO CONDUCT ITS DAY TO DAY LIVING ACTIVITIES SUCH AS: EATING, SLEEPING, BEARING YOUNG, ETC.

20. Does the grizzly bear have any religious or cultural significance for you?

Yes

No

21. Is all the necessary grizzly bear habitat found on public lands (National Forests, National Parks, Wilderness areas)?

Yes

No

Don't know

22. Does the Mission VALLEY contain any habitat areas that grizzly bears MUST use?

Yes

No

Don't know

23. Is your residence/property within grizzly bear habitat?

Yes

No

Don't know

24. In which seasons would you expect to find grizzly bears in the valley? (check all that apply)
- | | | |
|---------------------------------|---------------------------------|-------------------------------------|
| <input type="checkbox"/> Spring | <input type="checkbox"/> Fall | <input type="checkbox"/> Never |
| <input type="checkbox"/> Summer | <input type="checkbox"/> Winter | <input type="checkbox"/> Don't know |
25. What foods do grizzly bears eat? (check all that apply)
- | | | |
|---|---|-------------------------------------|
| <input type="checkbox"/> Plant foods | <input type="checkbox"/> Small animals | <input type="checkbox"/> Don't know |
| <input type="checkbox"/> Fruits/berries | <input type="checkbox"/> Dead animal meat | |
| <input type="checkbox"/> Insects | <input type="checkbox"/> Garbage | |
26. Do you feel that having grizzly bears in the Mission area adds to your quality of life?
- | | | |
|------------------------------|-----------------------------|-------------------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> No opinion |
|------------------------------|-----------------------------|-------------------------------------|
27. Do you, or would you, feel comfortable having a grizzly bear near your property? (check one)
- | | | | | |
|-----------------------------------|------------------------------------|------------------------------------|--------------------------------|------------------------------------|
| <input type="checkbox"/> all time | <input type="checkbox"/> most time | <input type="checkbox"/> sometimes | <input type="checkbox"/> never | <input type="checkbox"/> uncertain |
|-----------------------------------|------------------------------------|------------------------------------|--------------------------------|------------------------------------|
28. Have you, or anyone you know, seen a grizzly bear on YOUR property?
- | | |
|--|--|
| <input type="checkbox"/> No (GO TO QUESTION #29) | |
| <input type="checkbox"/> Yes → a. How long ago? (year) _____ | |
| b. In what season? | <input type="checkbox"/> Spring <input type="checkbox"/> Summer |
| | <input type="checkbox"/> Fall <input type="checkbox"/> Winter |
| c. Who saw it? | <input type="checkbox"/> You <input type="checkbox"/> Family <input type="checkbox"/> Someone else |
29. Have you or your neighbors seen grizzly bears on THEIR property?
- | | |
|--|---|
| <input type="checkbox"/> No (GO TO QUESTION #30) | <input type="checkbox"/> Yes → How long ago? (year) _____ |
|--|---|
30. Do your local neighbors/friends manage their property to maintain and protect grizzly bear habitat (wet-land plants, travel routes, etc.)?
- | | | | |
|------------------------------|-----------------------------|----------------------------------|-------------------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Some do | <input type="checkbox"/> Don't know |
|------------------------------|-----------------------------|----------------------------------|-------------------------------------|
31. Do you manage your property to maintain and protect grizzly bear habitat?
- | | |
|-----------------------------|--|
| <input type="checkbox"/> No | <input type="checkbox"/> Yes → If yes, what are you doing? _____ |
|-----------------------------|--|
-
32. Would you be encouraged to protect grizzly bear habitat on your property if: (check 3 most important)
- | | |
|---|--|
| <input type="checkbox"/> Habitat protection raised your property value | |
| <input type="checkbox"/> Tax incentives were available to landowner/tenant | |
| <input type="checkbox"/> More information was available on "How-To" | |
| <input type="checkbox"/> You received payments for livestock losses | |
| <input type="checkbox"/> You received rapid assistance if problems with a grizzly arose | |
| <input type="checkbox"/> You felt safe having grizzly bears near | |
| <input type="checkbox"/> Other, specify: _____ | |
33. Have any of your local neighbors, friends or relatives had a problem caused by grizzly bears on their property?
- | | | |
|------------------------------|-----------------------------|-------------------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Don't know |
|------------------------------|-----------------------------|-------------------------------------|
34. Do your nearby neighbors leave food items on their property that could attract grizzly bears to the area?
- | | |
|--|--|
| <input type="checkbox"/> Yes → What items? _____ | |
| <input type="checkbox"/> No | |
| <input type="checkbox"/> Don't know | |
35. Have you had a problem(s) with grizzly bears on your property?
- | | |
|---|---|
| <input type="checkbox"/> No (GO TO QUESTION #36) | |
| <input type="checkbox"/> Not sure if caused by grizzly (GO TO QUESTION #36) | |
| <input type="checkbox"/> Yes → a. How long ago? (year) _____ | |
| b. What was the problem(s)? _____ | |
| c. Are the problem(s) solved? | . |
| <input type="checkbox"/> Yes | |
| <input type="checkbox"/> No → What action is needed? _____ | |
36. If you needed assistance for a grizzly bear problem, who would you call? (check up to 3)
- | | |
|---|---|
| <input type="checkbox"/> Neighbor | <input type="checkbox"/> Montana Fish, Wildlife & Parks |
| <input type="checkbox"/> Tribal dispatch | <input type="checkbox"/> U.S. Fish & Wildlife Service |
| <input type="checkbox"/> County Sheriff | <input type="checkbox"/> No one |
| <input type="checkbox"/> Tribal Game Warden | <input type="checkbox"/> Bureau of Indian Affairs |
| <input type="checkbox"/> Bison Range | <input type="checkbox"/> Other, specify: _____ |

**IN THE FOLLOWING QUESTIONS YOU WILL BE ASKED FOR YOUR OPINIONS ABOUT THE STATUS OF THE GRIZZLY BEAR
AND THE WAY GOVERNMENT AGENCIES ARE MANAGING THE ANIMAL.**

37 How is the Montana grizzly bear classified under the U.S. "Endangered Species Act"? (check one)

<input type="checkbox"/> Endangered	<input type="checkbox"/> Stable	<input type="checkbox"/> Don't know
<input type="checkbox"/> Threatened	<input type="checkbox"/> Not listed	

38. How many grizzly bears live in the lower United States (not including Alaska)?
About (number) _____ Don't know

39. How many grizzly bears live in the Mission Mountains?
About (number) _____ Don't know

40. What should be done with grizzly bears: (ANSWER PART A & B)

- | | |
|--|--|
| a. In the lower United States? | b. In the Mission Mountains? |
| <input type="checkbox"/> Get rid of | <input type="checkbox"/> Get rid of |
| <input type="checkbox"/> Decrease numbers | <input type="checkbox"/> Decrease numbers |
| <input type="checkbox"/> Leave as is | <input type="checkbox"/> Leave as is |
| <input type="checkbox"/> Increase numbers | <input type="checkbox"/> Increase numbers |
| <input type="checkbox"/> Don't know/No opinion | <input type="checkbox"/> Don't know/No opinion |

41. Should local citizens take part in the above action?
a. In the lower U.S.? Yes No Don't know/No opinion
b. In the Missions? Yes No Don't know/No opinion

42. Which of the following agencies have an "active" grizzly bear management plan? (check all that apply)

- Flathead Forest
- U.S. Fish & Wildlife Service
- Montana Fish, Wildlife & Parks Dept.
- Lake County
- Confederated Salish & Kootenai Tribes/Bureau of Indian Affairs
- None of these
- Don't know

43. What is your opinion of each agency's grizzly bear management plan? (check one box to the right of each agency)

	very good	good	fair	poor	very poor	don't know
Flathead Forest	<input type="checkbox"/>					
U.S. Fish & Wildlife Service	<input type="checkbox"/>					
Montana Fish, Wildlife & Parks	<input type="checkbox"/>					
Lake County	<input type="checkbox"/>					
Confederated Salish & Kootenai Tribes and the Bureau of Indian Affairs	<input type="checkbox"/>					

44. What action should agencies as a whole take on the following grizzly bear management issues? (check one box to the right of each issue)

	greatly increase	increase	remain same	greatly decrease	decrease	no opinion	don't know
Bear research	<input type="checkbox"/>						
Hunting take of grizzlies	<input type="checkbox"/>						
Relocating problem bears	<input type="checkbox"/>						
Killing problem bears	<input type="checkbox"/>						
Educating people about grizzly bears	<input type="checkbox"/>						
Investigating complaints	<input type="checkbox"/>						
Closing areas heavily used by grizzly bears from Man	<input type="checkbox"/>						
Fines for killing grizzlies	<input type="checkbox"/>						
Identifying & protecting grizzly habitat on PUBLIC lands	<input type="checkbox"/>						
Identifying & protecting grizzly habitat on PRIVATE lands	<input type="checkbox"/>						
Government purchase of key habitat	<input type="checkbox"/>						

(FOR THE FOLLOWING GROUP OF QUESTIONS. CHECK YOUR RESPONSE TO THE STATEMENT)

45. Grizzly bears are in danger of disappearing in the lower United States.
 Strongly Agree Agree Uncertain Disagree Strongly Disagree

46. Grizzly bears are in danger of disappearing in the Mission Mountains.
 Strongly Agree Agree Uncertain Disagree Strongly Disagree
47. The disappearance of grizzly bears cannot be avoided if human needs are to be met.
 Strongly Agree Agree Uncertain Disagree Strongly Disagree
48. Overall, I like grizzly bears.
 Strongly Agree Agree Uncertain Disagree Strongly Disagree
49. The behavior and the habitat needs of the black bear and grizzly bear are the same.
 Strongly Agree Agree Uncertain Disagree Strongly Disagree
50. Agency management of black bears and grizzly bears is the same.
 Strongly Agree Agree Uncertain Disagree Strongly Disagree

THESE LAST QUESTIONS WILL BEGIN BY ASKING ABOUT YOUR EXPERIENCES WITH GRIZZLY BEARS AND WILL END WITH SOME QUESTIONS ON GRIZZLY BEAR BEHAVIOR.

51. What statement most accurately describes your response in any kind of dangerous situation? (check one)
 I get nervous and don't know what to do.
 I get excited and react without thinking.
 I get excited but try to think about my response.
 I remain calm and rationally plan my response.
52. Have you ever seen a bear in the wild? No (SKIP TO QUESTION #58) Yes (CONTINUE WITH #53)
53. What type of bear(s) have you seen? (check all that apply)
 Black bear Grizzly bear Not sure if Black or Grizzly
- (IF YOU HAVE NOT SEEN A GRIZZLY OR THINK THE BEAR(S) YOU SAW WAS PROBABLY A BLACK BEAR. SKIP TO QUESTION #58)
54. How many times have you been within 100 yards of a grizzly bear?
About (number) _____ OR Too many to count
55. The LAST time you saw, or thought you saw, a grizzly bear:
a. What was the date? (month, year) _____ / _____
b. Where were you? (check one)
 On your property
 On other private property
 Mission Mountain Tribal Wilderness
 Other tribal lands
 In National Forest, National Park, or Wilderness Area
 Other, specify: _____
c. Were you carrying a gun? Yes No
d. What was the grizzly doing? (check one)
 Walking somewhere
 Sleeping/laying down
 Running
 Chasing something, specify: _____
 Crossing road
 Playing
 Getting into something, specify: _____
 Eating something, specify: _____
 Other, specify: _____
e. Did the grizzly have young nearby? Yes No Unsure
f. Which word BEST describes your feelings during the last encounter? (check one)
 Fear
 Anger
 Apprehension
 Excitement
 Admiration
 Other, specify: _____
g. What action did you take? _____
h. What was the outcome of your action? _____
i. If in the same situation today, would you take the same action?
 Yes No → What action would you take? _____

(IF YOU HAVE SEEN A GRIZZLY BEAR ON ONE OCCASION ONLY SKIP TO QUESTION #58)

56. On the NEXT TO LAST time you saw a grizzly bear:
a. What was the date? (month/year) _____ / _____
b. Where were you? (check one)
 On your property
 On other private property
 Mission Mountain Tribal Wilderness
 Other tribal lands
 National Forest, National Park, or Wilderness Area
 Other, specify: _____

- c. Were you carrying a gun? Yes No
- d. What was the grizzly doing? (check one)
- | | |
|--|---|
| <input type="checkbox"/> Walking somewhere | <input type="checkbox"/> Crossing road |
| <input type="checkbox"/> Sleeping/laying down | <input type="checkbox"/> Playing |
| <input type="checkbox"/> Running | <input type="checkbox"/> Getting into something, specify: _____ |
| <input type="checkbox"/> Chasing something, specify: _____ | <input type="checkbox"/> Eating something, specify: _____ |
| | <input type="checkbox"/> Other, specify: _____ |
- e. Did the grizzly have young nearby? Yes No Unsure
- f. What word BEST describes your feelings during the encounter? (check one)
- | | |
|---------------------------------------|--|
| <input type="checkbox"/> Fear | <input type="checkbox"/> Excitement |
| <input type="checkbox"/> Anger | <input type="checkbox"/> Admiration |
| <input type="checkbox"/> Apprehension | <input type="checkbox"/> Other, specify: _____ |
- g. What action did you take at the time? _____
- h. What was the outcome of your action? _____
- i. If in the same situation today, would you take the same action?
- | | |
|------------------------------|---|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No → What action would you take? _____ |
|------------------------------|---|
57. In OTHER encounters have you ever shot at a grizzly?
 No Yes → Why did you shoot? _____
58. If you were near a grizzly that was huffing and loudly clacking its teeth, that behavior probably means: (check one)
- | | |
|--|--|
| <input type="checkbox"/> the bear is tired | <input type="checkbox"/> the bear is eating |
| <input type="checkbox"/> the bear is angry and may attack | <input type="checkbox"/> the bear is about to run away |
| <input type="checkbox"/> the bear is gathering information | <input type="checkbox"/> don't know |
59. If a grizzly is standing on its hind legs with its head up and ears forward, that behavior probably means: (check one)
- | | |
|--|--|
| <input type="checkbox"/> the bear is tired | <input type="checkbox"/> the bear is eating |
| <input type="checkbox"/> the bear is angry and may attack | <input type="checkbox"/> the bear is about to run away |
| <input type="checkbox"/> the bear is gathering information | <input type="checkbox"/> don't know |
60. A grizzly's best sense is: (check one)
- | | |
|-------------------------------------|----------------------------------|
| <input type="checkbox"/> Vision | <input type="checkbox"/> Hearing |
| <input type="checkbox"/> Smell | <input type="checkbox"/> Taste |
| <input type="checkbox"/> Don't know | |
61. Do you carry a gun with you when spending time in grizzly country? (check one)
- | | |
|---|------------------------------------|
| <input type="checkbox"/> All of the time | <input type="checkbox"/> Sometimes |
| <input type="checkbox"/> Most of the time | <input type="checkbox"/> Never |
| <input type="checkbox"/> Half of the time | |
62. Would you consider killing a grizzly?
 Yes → Under what conditions? (check all that apply)
- | | |
|--|--------------------------|
| <input type="checkbox"/> grizzly is on your property | <input type="checkbox"/> |
| <input type="checkbox"/> grizzly is damaging fences, pens, equipment, etc. | <input type="checkbox"/> |
| <input type="checkbox"/> grizzly is damaging gardens, crops, feed stores, etc. | <input type="checkbox"/> |
| <input type="checkbox"/> grizzly is threatening livestock | <input type="checkbox"/> |
| <input type="checkbox"/> grizzly is killing livestock | <input type="checkbox"/> |
| <input type="checkbox"/> grizzly is threatening you or a family member | <input type="checkbox"/> |
- No
63. What would be your response in the following situation? You are alone walking along a wilderness trail. You are now four miles from the trailhead where you left your car. As you turn a bend in the trail you see a grizzly bear about 50 yards ahead. The grizzly is standing on its hind legs looking straight at you. What do you do? (check one)
- | | |
|---|--|
| <input type="checkbox"/> Climb a tree | <input type="checkbox"/> Run back the way you came |
| <input type="checkbox"/> Get your gun out to shoot the bear | <input type="checkbox"/> Continue walking forward, trying to scare the bear away |
| <input type="checkbox"/> Stand still, making loud noises to scare the bear away | <input type="checkbox"/> Crouch down and slowly move away |

PLEASE INCLUDE YOUR ADDITIONAL COMMENTS HERE:

PLEASE MAIL THE COMPLETED QUESTIONNAIRE
IN THE SELF-ADDRESSED, STAMPED ENVELOPE.

THANK YOU VERY MUCH!