Regional Results from the Research Project Entitled

Wildlife Values in the West

A Project of the
Human Dimensions Committee of the
Western Association of Fish and Wildlife Agencies

Produced by the Human Dimensions in Natural Resources Unit
Colorado State University

Colorado State University
Knowledge to Go Places

September 2005

Sport Fish & Wildlife Restoration

WESTERN ASSOCIATION OF
FISH AND WILDLIFE AGENCIES

Report Authors

This project report was produced by Tara Teel, Ashley Dayer, Michael Manfredo, and Alan Bright of the Human Dimensions in Natural Resources Unit, Colorado State University.

Participating State Fish and Wildlife Agency Representatives

- Bill Romberg & Cindi Jacobson (Alaska Department of Fish and Game)
- Ty Gray (Arizona Game and Fish Department)
- Sonke Mastrup (California Department of Fish and Game)
- Linda Sikorowski & Tiffany Meredith (Colorado Division of Wildlife)
- Jolie Wanger & Paul Conry (Hawai`i Department of Land and Natural Resources)
- Michele Beucler (Idaho Department of Fish and Game)
- Mike Mitchener (Kansas Wildlife and Parks)
- Mike Lewis & Rob Brooks (Montana Fish, Wildlife and Parks)
- Alicia Hardin (Nebraska Game and Parks Commission)
- Jill Olson & Kelly Clark (Nevada Department of Wildlife)
- Bill Graves (New Mexico Department of Game and Fish)
- Arlen Harmoning (North Dakota Department of Game and Fish)
- Andrea Crews (Oklahoma Department of Wildlife Conservation)
- Ann Snyder (Oregon Department of Fish and Wildlife)
- Larry Gigliotti (South Dakota Department of Game, Fish and Parks)
- Ruben Cantu (Texas Parks and Wildlife Department)
- Dana Dolsen (Utah Division of Wildlife Resources)
- George Tsukamoto & Mick Cope (Washington Department of Fish and Wildlife)
- Chris Burkett (Wyoming Game and Fish Department)

Acknowledgements

Wildlife Values in the West 2004 is a project of the Western Association of Fish and Wildlife Agencies (WAFWA) Human Dimensions Committee in cooperation with the Human Dimensions in Natural Resources Unit at Colorado State University (CSU). The project was funded by both participating state agency contributions and through a grant awarded by the International Association of Fish and Wildlife Agencies (IAFWA) as part of the 2002 Multistate Conservation Grant Program. Special thanks to Ken Ambrock, Steven Huffaker, Jeff Koenings, and Larry Bell (Current and Former WAFWA Presidents); Duane Shroufe (WAFWA Human Dimensions Committee Chair); WAFWA Human Dimensions Committee members; Larry Kruckenberg (WAFWA Secretary/Treasurer); Ty Gray and Linda Sikorowski (Co-Project Managers); and the Directors of the 19 participating states.

We would also like to thank the CSU students who assisted with data collection and data entry efforts. Megan Everett, Robert Hunter, Jill Majerus, and Holly Stinchfield were particularly involved. Other students who aided were Karen Blust, Lauren Buller, Cari Burkholder, Clare Buttry, Tawnya Ernst, Jeremiah Ervin, Samantha Farro, Curtis Frazier, Garret Gant, Forrest Gerke, Nadine Govou, Todd Hagedone, Jason Hamrick, Erica Hanson, Chris Hofer, Sharna Horn, Amanda Jamison, Jeremiah Johnson, Jennifer Kahrs, Amanda Kalesperis, Jeff Lambert, Rachel Liebman, Tracey Lipfert, Katie Lyon, Matthew Magnuson, James McEachern, Jessica Nething, Jordan Nye, Maureen O'Mara, James Parsons, Connie Pfeiffer, Melissa Rechner, Janet Reed, Jennifer Schaus, Chad Scheckenburger, Emily Silva, Patrice Stafford, Prasanna Sugavanam, Sara Trayser, Malinda Trujillo, April Wackerman, and Christina Walden.

Suggested Citation

Teel, T. L., Dayer, A. A., Manfredo, M. J., & Bright, A. D. (2005). *Regional results from the research project entitled* ***"Wildlife Values in the West."*** (Project Rep. No. 58). Project Report for the Western Association of Fish and Wildlife Agencies. Fort Collins, CO: Colorado State University, Human Dimensions in Natural Resources Unit.

EXECUTIVE SUMMARY

The primary purpose of this study was to determine wildlife value orientations among publics in the western United States and to identify factors influencing the presence of these orientations. Additional objectives were to determine public attitudes toward population-level management techniques, alternative funding and programming approaches, public involvement efforts, trust in government, and characteristics of species that should receive conservation funding support. It is intended that this study serve as a foundation for comparisons with future studies to establish trends in public thought regarding wildlife and wildlife management.

Data for this study were collected using a mail-back survey administered to residents in 19 participating states. The survey was comprised of state-specific questions and regional (the same questions for all 19 states) questions. Only results of regional questions are provided in this report. Sample sizes were obtained to provide estimates within $\pm$ 5% at the 95% confidence level for each state. Over 12,000 completed surveys were returned, and the overall response rate for the mail-out survey was 21%.

A telephone nonresponse survey of 7,600 people was completed, and tests for respondent/nonrespondent differences were conducted. Based on these tests, data were weighted to correct for age and wildlife-related recreation participation. Minorities, lower income and lower education publics may still be slightly underrepresented in study results. Analysis, however, indicated that this would have minimal impact on the variables of key importance in this study—wildlife value orientations and responses to wildlife management-related issues. Additional analysis using independent data sources showed strong convergent validity for study findings.

Key findings of the study include:

- Wildlife value orientations in the western U.S. can be characterized along several distinct dimensions including mutualism-utilitarian and attraction-concern for safety. Of these, the mutualism-utilitarian dimension has a dominating effect on thought about wildlife because it forms the basis for evaluating actions or issues that involve treatment of wildlife. Using mutualism and utilitarian wildlife value orientations responses, we identified four "wildlife value orientation types" among members of the public. *Utilitarians* hold a philosophy that wildlife are for human use, and these individuals are strongly positive toward hunting and fishing. *Mutualists* are those who consider wildlife as part of an extended family and believe in an ideal world where people and wildlife live side-by-side without fear. *Pluralists* are those who have both utilitarian *and* mutualism value orientations. For these individuals, the wildlife value orientation that becomes salient is very dependent on the specific situation a person is in. *Distanced* are those individuals who do not have either a utilitarian or a mutualism value orientation. They tend to score lower on the wildlife belief dimension measuring attraction toward wildlife and higher on the belief dimension measuring concern for safety when around wildlife. When compared with the other two groups, Utilitarians and Pluralists are older, more likely to hunt, more likely to have lived in a state for a longer period of time, and more likely to be male.

- States vary greatly in the composition of these wildlife value orientation types. Differences are associated strongly with differences in state-level income, education, and urbanization. States with populations that are more rural, have lower income, and less education have higher proportions of Utilitarians. States that are more urban, have higher income, and higher education have higher percentages of Mutualists. These wildlife value orientation types differ on a variety of descriptive variables and their attitudes toward wildlife management issues.

- This study examined whether or not wildlife value orientation shift is associated with broader societal value shift. Broad societal shift has been described empirically as shifting from Materialist values (focused on safety and economic well-being) to Post-Materialist values (focused on belongingness, self-actualization, environmentalism, and distrust of government). Results from this study show that states with higher proportions of Utilitarians have higher percentages of Materialists and that states with higher proportions of Mutualists also have higher percentages of Post-Materialists. In addition, results show a negative relationship between the percent of Mutualists and trust in government in a state and a positive relationship between the percent of Mutualists and environmentalism at the state level. These findings provide support for the proposal that wildlife value orientation shift, characterized by movement away from a utilitarian orientation toward wildlife, is part of a broader societal shift.

- Value shift—of broad societal values and wildlife value orientations—is proposed to be the result of basic changes in the mode of economic production and demography in society. Tests in this study support that conclusion. More specifically, results show a strong inverse relationship between the percent of Utilitarians in a state and variables measuring income, education, and urbanization. The opposite relationship is found when considering the percent of Mutualists in a state. Results suggest that with sustained population growth and an extension of past trends – i.e., increased urbanization, affluence, and education – we will likely see a continued erosion of utilitarian thought and greater movement toward a mutualism orientation toward wildlife. Based on the potential implications we outline, these trends are likely to affect participation in wildlife-related recreation activities like hunting and to influence public perceptions of wildlife-related issues.

- The percent of active hunters in a state (i.e., those who participated in the past 12 months out of those who ever hunted) is strongly related to the composition of wildlife value orientation types in a state. More specifically, states with higher percentages of Utilitarians have higher percentages of active hunters. This reinforces the notion that the decline in hunting is rooted in value shift and the broad societal factors that are driving that shift.

- This study explored public attitudes regarding deer and bear population-level management techniques in two situations of human-wildlife conflict: the animals are a "nuisance" and the animals are a "safety threat." Among the three control strategies presented, a majority of the public found "doing nothing" to be unacceptable in both situations for both species. Hunts conducted by agency staff or by recreational hunters were favored techniques for both deer situations. For bear situations, agency hunts were far more favorable than

recreational hunts. Only in states with a higher proportion of Utilitarians and Pluralists did a majority favor recreational hunts.

- The use of permanent contraceptive techniques as a means for controlling deer populations was not supported by the public whether the situation involves species as a nuisance or spread of disease. Temporary contraceptives were supported by much higher proportions of people but public opinion was still divided on that technique.

- Approximately one-half of the public in most states felt that the funding and programming approach that they perceive exists within their state is different than the one they would prefer. The approaches were comprised of source of funding (hunter/angler licenses and/or general public tax dollars) and who benefits from agency programs (hunters/anglers and/or all members of the public). The public favored an approach in which licenses *and* taxes fund management and with programming that benefits all members of the public. Results in terms of the perceived current approach varied considerably by state.

- Approximately one-half of the public expressed trust in agencies to make decisions without their input. However, less than half felt their opinions are heard, taken into account, or would make a difference if given. States varied considerably on the question asking whether or not their agency makes a good effort to obtain input.

- Overall, trust in state fish and wildlife agencies was higher than that for state government, which was in turn higher than that for the federal government. Results varied moderately by state.

- Questions were asked to determine the characteristics of species that would be preferred for conservation funding. A contingent choice modeling approach was used. Results examined three species factors and choices within those factors--i.e., origin (native; nonnative), use (game; nongame), and status (extirpated; declining; common). This analysis provided predictive modeling that allows states to estimate public preference when species are described by these factors. Findings indicated that within these factors declining and extirpated species are generally prioritized for conservation funding over common; native species are prioritized over nonnative species; and game species are prioritized over nongame species. The ordering of the importance of factors in choices (i.e., origin, use, and status) varied by subregion within the western U.S. and by state.

- Analysis of current participants as compared to those expressing interest in participation indicates high latent demand for wildlife viewing and fishing, with more modest latent demand for hunting participation.

This summary serves only to give a very high-level overview of findings. Comparisons and differences among states have been minimized for the sake of providing a sense of general findings. Detailed information, available for comparison by state, is provided in the study report.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

SECTION I. INTRODUCTION AND OVERVIEW

The wildlife of North America mean many different things to people. Some consider them a fearful threat to safety, while to others wildlife are a source of wonderment and fascination. They are a source of material and economic advancement; yet wildlife can also be seen as forms of life that require nurturing and caring. They are the object of avid recreational pursuit and vocational study. They are held as important symbols of treasured ideals and an important indicator of a healthy environment.

These many meanings form the basis for the conflict and disagreement surrounding the management of wildlife. This conflict arises daily in the decisions facing wildlife professionals. At the core of the conflict are questions such as what are acceptable forms of taking wildlife? What types of opportunities are the most in demand by wildlife recreationists? How do we expend our limited resources in assisting game versus non-game species or declining versus extirpated species? How do we deal with wildlife that impact the economic viability of ranchers and farmers?

To many who served in the wildlife profession during the latter third of the twentieth century, this level of conflict seemed to intensify over time. Increasingly, there appeared to be more distinct stakeholders with multiple differing views. This perception prompted a very basic question – Are people's values toward wildlife changing? If so, how can that change be characterized, and what is the cause? Furthermore, to what extent can trends in value shift be guided or affected?

The purpose of the study reported here was to take the first step in acquiring scientific information to address these critical questions. It was a first step due to the nature of the study topic – societal-level change *over time*. A research-oriented examination of this topic faced challenges unable to be adequately addressed by the "typical" one-state or one-issue human dimensions study that had been conducted in the past. More specifically, it demanded an approach that was *broad-based geographically* and *temporally recurrent*.

The broad geographic base was useful in describing the current array of public values toward wildlife in the United States. As important, however, the pattern of differences across states gave clues about how and why societal changes are occurring. This cross-sectional approach is perhaps the only way to examine *past trends* of change in public values toward wildlife since baseline information had not previously been collected on a broad scale. Future research will have the benefit of being able to compare data observations over time. That is, the current study, as designed, acquired data that will serve as a baseline for examining the *trend of change into the future*. It is planned that data will be collected again in approximately 10 years to begin to monitor trends in value shift over time.

Given the magnitude of the question and the task, this type of research necessitated the involvement of multiple state fish and wildlife agencies. Agencies participated in this effort through the auspices of the Western Association of Fish and Wildlife Agencies (WAFWA). More specifically, the WAFWA Human Dimensions Committee, working collaboratively with

researchers at Colorado State University (CSU), advanced this research through the WAFWA organization.

A. STUDY OBJECTIVES

In an attempt to maximize the utility of data collected through this effort, multiple objectives were established:

1. To describe the current array of public values toward wildlife and identify their distribution across states.

2. To segment publics on the basis of their values toward wildlife and understand their sociodemographic and lifestyle characteristics.

3. To begin to understand how and why wildlife values are changing and determine the possible implications of value shift for wildlife management.

4. To aid WAFWA region fish and wildlife agencies in understanding public responses to key *regional and state-specific* wildlife issues.

5. To assist with state Comprehensive Wildlife Conservation Strategy (CWCS) efforts through an identification of public perceptions related to managing for biodiversity and species of concern.

6. To describe current participation and latent demand for hunting, fishing, and wildlife viewing in the WAFWA region, and identify factors that may be related to demand for these activities.

B. ORGANIZATION OF THIS REPORT

The body of this report presents results in order by the objectives listed above. Each section is labeled to reflect the objective it addresses. More detail on the results presented in many of the sections can be found in the tables presented in Appendix A of this report. Project methods and methodological issues – including sampling, data collection, measurement of key variables, survey response rates, data weighting procedures, and an examination of issues related to nonresponse – can be found in the remaining appendices.

SECTION II. WILDLIFE VALUE ORIENTATIONS AND A SEGMENTATION OF WESTERN PUBLICS

[RESULTS FOR STUDY OBJECTIVES 1 & 2]

A. CONCEPTUAL BACKGROUND: A THEORY ON WILDLIFE VALUE ORIENTATIONS

The concept of wildlife value orientations has emerged as a way of capturing the diversity of values that people hold toward wildlife. It has been applied in a number of contexts, with a primary focus on predicting wildlife-related attitudes and behaviors. As an example, studies have examined the utility of wildlife value orientations in explaining variation in public support for wildlife management proposals (e.g., Whittaker, 2000) and in defining participation in wildlife-related recreation activities such as hunting (e.g., Fulton, Manfredo, & Lispcomb, 1996). An overview of the concept and how we define and measure wildlife value orientations – provided in this section – is necessary before we begin to explore the forces that may be driving societal-level shift in thought about wildlife (Section III).

The Values Concept in Human Dimensions Research

The values concept has been central to investigations into the human dimensions of wildlife management. For example, it has been used to explain differences in public attitudes toward wildlife issues (Kellert, 1976; Manfredo, Pierce, Fulton, Pate, & Gill, 1999; Purdy & Decker, 1989; Tarrant, Bright, & Cordell, 1997) and participation in wildlife-related recreation (Bryan, 1980; Fulton et al., 1996; Manfredo, Sneegas, Driver, & Bright, 1989) and to determine how wildlife can contribute to the quality of human life (Shaw, 1987). Values information has also been useful in assisting with development of effective communication strategies that target specific segments of the public (e.g., see Bright, Manfredo, & Fulton, 2000). Understanding values has achieved particular significance in recent years as stakeholder conflict becomes increasingly inherent in contemporary wildlife issues. This conflict, driven in part by shifting public values, is evidenced by waves of recent ballot initiatives that threaten traditional wildlife management practices (Minnis, 1998).

Wildlife values have been defined and measured using the terminology of a number of disciplines including economics, ecology, sociology, and psychology (for examples see Shaw & Zube, 1980). While conceptual clarity in the human dimensions literature is lacking, a few key definitions of values have emerged. Steinhoff (1980) defined values as mental constructs that express the perceived worth or significance of things in relation to other things. Another commonly-cited reference, drawn from psychology, is Rokeach (1973) who defined values as enduring beliefs about preferred modes of conduct or desired end-states of existence. A similar conception is offered by Schwartz (1992), whose psychological research has been applied frequently in the study of environmental beliefs (e.g., see Stern, Dietz, Kalof, & Guagnano, 1995). He defined values as desirable goals that transcend situations, vary in importance, and serve as guiding principles in the life of an individual or other social entity.

As the concept has evolved, human dimensions researchers have come to agree upon certain key characteristics of values. Their importance lies in the central role they play in the hierarchy of cognitions that directs individual behavior (Ajzen & Fishbein, 1980; Homer & Kahle, 1988). In this belief structure, they form the basis for more specific attitudes and behaviors. They are relatively few in number, are formed early on in life, and are highly stable and resistant to change at the individual level (Inglehart, 1990; Rokeach, 1973; Schwartz, 1992). Unlike specific attitudes and other higher order cognitions, values transcend specific situations and are commonly shared among individuals within a culture (Feather, 1990; Inglehart, 1990).

Utility of the Values Concept

The utility of the values concept lies primarily in its ability to help us understand people's behaviors and responses to management issues. Because values provide a foundation for more specific cognitions like attitudes and behaviors, identification of wildlife values allows us to anticipate how people will react to a host of wildlife-related topics. In addition, an examination of how these values are changing at a societal level provides direction in planning for the future of wildlife management.

As summarized by Teel, Manfredo, Bright, and Dayer (2004), knowledge about wildlife values can assist in a number of areas with fish and wildlife agency planning and decision-making efforts. Below is a brief listing of some of the ways in which this information can be useful.

- It provides a better understanding of diverse publics through a determination of the multiple perspectives toward wildlife that exist in society.

- It enhances the ability of state fish and wildlife agencies to attend to the interests of their publics and anticipate how wildlife-related issues and management strategies will be received.

- It allows development of efficient communication programs through identification of specific segments of the public and their sociodemographic and lifestyle characteristics.

- It provides a clear basis for envisioning and planning for the future (e.g., understanding how wildlife values are changing can help agencies anticipate future trends and how they may affect wildlife management).

- It fosters collaboration among state fish and wildlife agencies in future planning efforts (e.g., states seen as having similar publics may benefit from working together in designing effective public communication techniques).

Development of a Theory on Wildlife Value Orientations

Past researchers have identified typologies to represent the broad array of wildlife values and corresponding stakeholder value types. For example, as early as 1947, King identified specific categories of wildlife values including recreational, aesthetic, educational, biological, social, and commercial. Similar classifications based on the different uses of wildlife (Hendee, 1969;

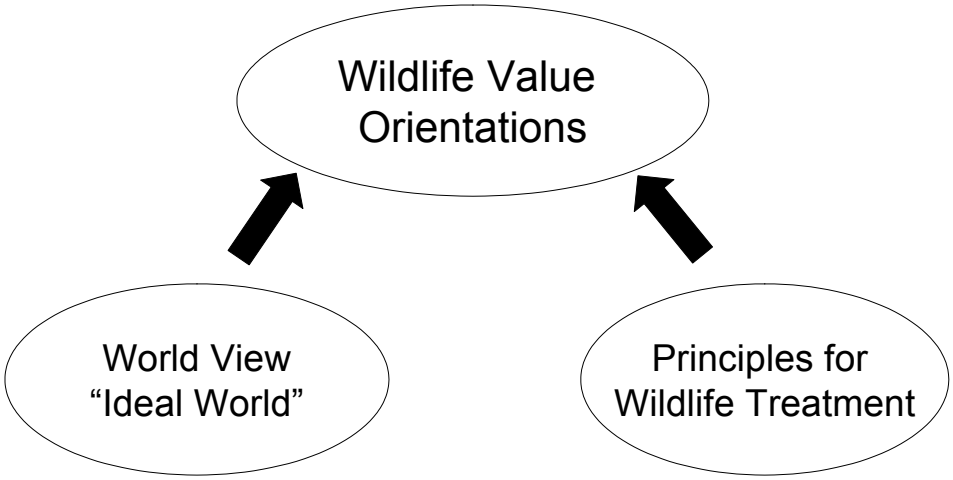
Rolston, 1979; Shaw, 1974) and the types of recreation activity engaged in (Hendee, 1974) have also been employed. More recent applications, including Kellert's (1980) typology of attitudes toward animals and Purdy and Decker's (1989) wildlife attitudes and values scale (WAVS), have been used to identify specific groups of stakeholders on the basis of their wildlife values.

In 1996, Fulton et al. introduced a new classification scheme based on the concept of wildlife value orientations. Their approach has been applied in a number of subsequent studies (e.g., DeRuiter & Donnelly, 2002; Manfredo et al., 1999; Manfredo & Fulton, 1997; Manfredo & Zinn, 1996; Manfredo, Zinn, Sikorowski, & Jones, 1998; Zinn, Manfredo, & Barro, 2002). In this approach, value orientations are a component of an individual's hierarchical belief structure. They are an expression of one's values and are revealed through the pattern and direction of basic beliefs held by an individual (Fulton et al., 1996). Value orientations provide the foundation for an individual's attitudes and norms, which in turn guide their behavior.

Prior research has shown that wildlife value orientations are effective in predicting participation in wildlife-related recreation (Fulton et al., 1996) as well as support for wildlife management actions (Bright et al., 2000; Manfredo et al., 1998; 1999; Manfredo & Fulton, 1997; Manfredo & Zinn, 1996; Whittaker, 2000; Zinn, Manfredo, Vaske, & Wittman, 1998).

The current study expands upon this research. Below is the conceptual model we have developed to contribute to an understanding of the wildlife value orientation concept.

Figure II.A.1. Conceptual model for wildlife value orientations.



Wildlife value orientations can be viewed as *expressions of fundamental values*. A classic definition states that values are enduring beliefs about desired end states and modes of conduct (Rokeach, 1973). They are "goals for living" that define how we want the world to be (i.e., a "worldview") and principles that guide our behavior. In extending this idea to how people relate to wildlife, we have identified two "classes" or categories of thought (see Figure II.A.1).

Worldview captures the notion of "desired end states" in the values definition – an ideal view of what one would want the world to be regarding wildlife. Principles for wildlife treatment

represent the idea of "desired modes of conduct" – guiding principles for how an individual perceives we should interact with and treat wildlife.

As described by Fulton et al. (1996), wildlife value orientations are composed of "dimensions," or sets, of basic beliefs about wildlife and wildlife management. They are revealed through the pattern of direction and intensity among these beliefs. Our recent work has revealed two main orientations toward wildlife that can be classified along what is known as the **"mutualism-utilitarian"** *value orientation dimension*. The latter can be viewed as a broader category of thought about wildlife that is made up of more specific belief sets. Below is a detailed description of the components of this broad dimension.

1. ***Utilitarian Wildlife Value Orientation***

   The utilitarian wildlife value orientation is one involving a view that wildlife should be used and managed for human benefit. It is linked to the "use" orientation previously identified by Fulton et al. (1996) and is believed to be the orientation that society is moving away from (Manfredo & Zinn, 1996).

Ideal World	Principles for Wildlife Treatment
o Wildlife exists for human use and enjoyment.	o Manage wildlife so that humans benefit.
o There is an abundance of wildlife for hunting and fishing.	o Prioritize the needs of humans over wildlife.

Basic Belief Dimensions

A. *Utilitarian Belief Dimension*	B. *Hunting Belief Dimension*
Philosophy regarding utilization of wildlife for human benefit.	Philosophy regarding hunting as a humane and positive activity.

2. ***Mutualism Wildlife Value Orientation***

   This orientation is a refinement of the protection orientation identified by Fulton et al. (1996). It is associated with a desire for humans and wildlife to be able to co-exist or live in harmony. It is linked to a perception that humans and animals depend upon each other and that they benefit one another in their relationship – thus the term mutualism. This orientation is believed to be one that society is moving more toward in terms of people's perceptions of wildlife and how wildlife should be treated.

Ideal World	Principles for Wildlife Treatment
o Humans and wildlife are able to live side by side without fear.	o Assign animals rights like humans.
o All living things are seen as part of one big family.	o Take care of wildlife.
o Emotional bonding and companionship with animals is part of human experience.	o Prevent cruelty to animals.
o There is no animal suffering.	

Basic Belief Dimensions

A. *Mutualism Belief Dimension*	B. *Caring Belief Dimension*
Philosophy regarding co-existence of humans and wildlife as if they were family.	Philosophy regarding a desire to care for animals and prevent them from suffering.

Exploration of Other Dimensions of Thought about Wildlife

To contribute to furthering our understanding of the *diversity* of orientations that exist among the public, two additional dimensions of thought about wildlife were identified and explored in this study:

1. ***Attraction Belief Dimension***

   This set of beliefs is associated with an interest in and desire to know more about wildlife. It is grounded in the feeling that wildlife enhances human life experiences. This belief dimension is a refinement of the wildlife appreciation orientation identified by Fulton et al. (1996).

2. ***Concern for Safety Belief Dimension***

   This set of beliefs centers around concerns related to interacting with wildlife due to possibility of such things as harm (e.g., due to attacks by wildlife) or disease contraction. Individuals scoring high on this dimension are worried about encountering wildlife while in the outdoors.

As discussed in more detail in the section on measurement in Appendix B, these two belief dimensions were shown to be related in the current study and may align along a single *value orientation dimension* (i.e., broader category of thought) that we have termed **"attraction-concern for safety."**

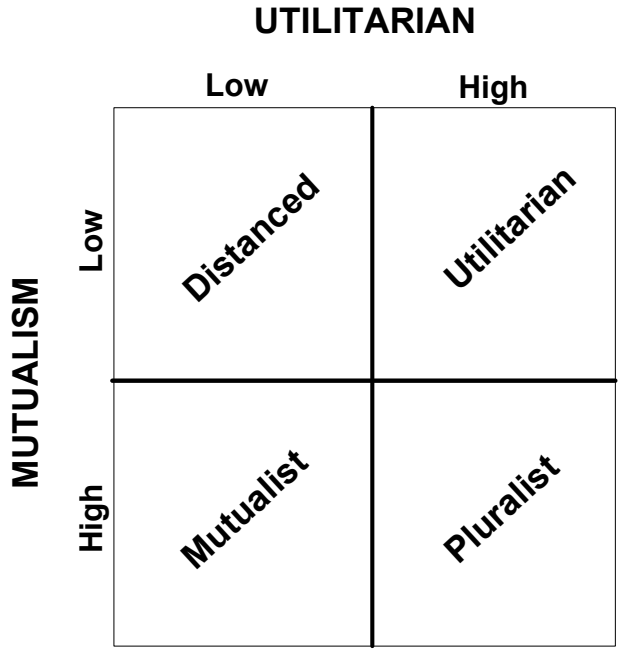
B. SEGMENTATION OF PUBLICS ON THE BASIS OF THEIR WILDLIFE VALUE ORIENTATIONS

A useful way of summarizing information about wildlife value orientations is to identify different "types" of people on the basis of their orientations (Bright et al., 2000). Characterizing segments of the public in this manner allows for a better understanding of the diversity of publics that exists as well as anticipation of how different groups of people will respond to proposed management strategies and programs. Description of the value orientation types on the basis of sociodemographic and lifestyle characteristics can assist in determining how different groups of people can be reached for agency communication purposes and in ensuring that these groups are represented in agency planning and decision-making efforts.

Four unique value orientation types were identified in the current study using the utilitarian and mutualism value orientation scales. Appendix B provides detailed information about how these scales were constructed and tested for reliability and validity prior to the identification of value orientation types. Based upon findings relative to the predictive validity of these scales and their components as well as our desire to emphasize constructs believed to be at the forefront of societal-level changes in thought about wildlife (see Section III for elaboration on this point), the decision was made to focus only upon the mutualism-utilitarian value orientation dimension in the identification of publics.

Respondents were assigned a score on the two wildlife value orientation scales (utilitarian and mutualism) and then compared on both orientations simultaneously through a crosstabulation procedure. A visual display of how each value orientation type was identified in this context is shown in Figure II.B.1.

Figure II.B.1. Four types of people identified on the basis of their wildlife value orientations.



Below is a more detailed description of each value orientation type, including how people were classified on the basis of scoring on the two wildlife value orientations.

1. ***Utilitarian Wildlife Value Orientation Type***

   Utilitarians were classified as those who scored greater than 4.50 ("high") on the utilitarian value orientation scale and less than or equal to 4.50 ("low") on the mutualism value orientation scale. These individuals possess beliefs about wildlife that society is purportedly moving away from. Specifically, they believe that wildlife should be used and managed for human benefit.

2. ***Mutualist Wildlife Value Orientation Type***

   Mutualists were classified as those who scored greater than 4.50 ("high") on the mutualism value orientation scale and less than or equal to 4.50 ("low") on the utilitarian value orientation scale. These individuals are believed to represent a less traditional view of the wildlife resource, one in which humans and wildlife are meant to co-exist or live in harmony.

3. ***Pluralist Wildlife Value Orientation Type***

   Pluralists hold both a mutualism and a utilitarian value orientation toward wildlife (i.e., they score "high" on both scales). This may appear confusing but can be explained by how these orientations likely manifest themselves in day-to-day situations. The name for this group was taken from Tetlock's (1986) Value Pluralism Model which describes how people can endorse values that have conflicting evaluative implications for specific issues. Drawing upon this model, the influence of the two value orientations is believed to be situationally-contingent. In other words, which of the orientations plays a role is dependent upon the given situation. As an illustration, consider a woman whose husband is a hunter. She finds hunting to be an acceptable practice – it supplies food for her family, and she supports others' participation in the sport. At the same time, however, she can't stand the thought of killing an animal and therefore will not hunt. Her utilitarian orientation manifests itself in the first situation while her mutualism orientation prevails in the other.

   The Pluralists as a group are believed to be an indication of our society in transition given that they hold both a utilitarian orientation toward wildlife that society is purportedly moving away from, as well as a mutualism orientation that we may be moving toward.

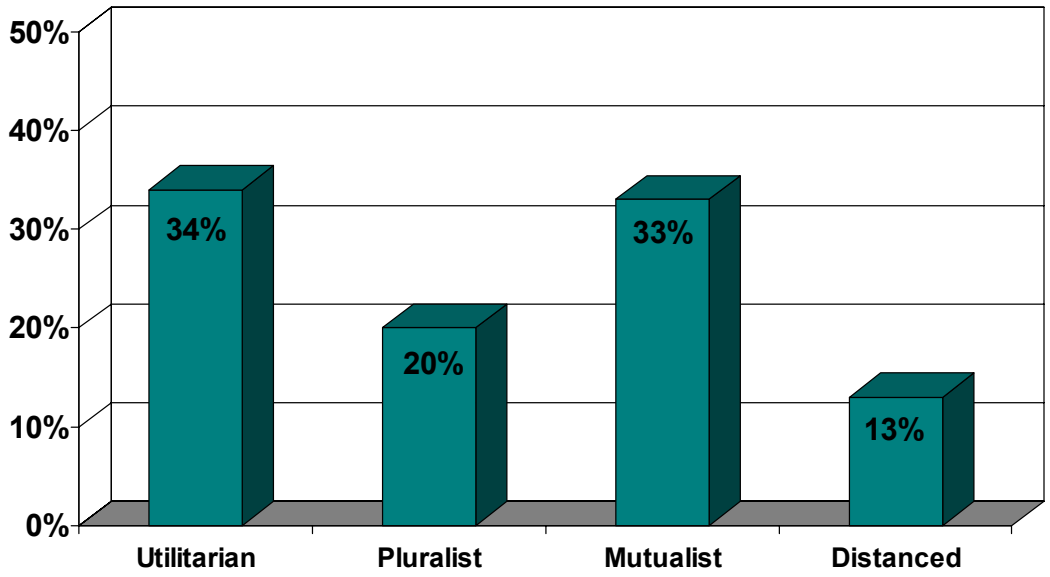
4. ***Distanced Wildlife Value Orientation Type***

   The Distanced individuals appear to be just that – distanced from the issue of wildlife. They do not hold either a mutualism or a utilitarian orientation toward wildlife (i.e., they score "low" on both scales). This could mean that they are less *interested* in wildlife-related issues and that wildlife-related issues are therefore less salient to them. It may also mean that, for whatever reason, their values may not be oriented very strongly toward wildlife.

Distribution of Value Orientation Types

Figure II.B.2 displays the distribution of each wildlife value orientation type in the region (all 19 participating states combined).

Figure II.B.2. Distribution of wildlife value orientation types in the region.



Figures II.B.3 through II.B.6 display maps showing the distribution of value orientation types across participating states. Between 25 and 50% of publics across states can be classified as Utilitarians. The highest percentages of these individuals can be found in Alaska and South Dakota, followed closely by Oklahoma, Idaho, Utah, Montana, and North Dakota. The lowest percentages are noted for Hawai`i, followed by California, Nevada, Washington, and Oregon.

This pattern appears to reverse itself for distribution of Mutualists across states. Hawai`i, California, and Washington have the highest percentages of these individuals, while South Dakota, Alaska, and North Dakota – states with higher percentages of Utilitarians relative to other states – have the lowest. Overall, between 15 and 41% of people across states can be categorized as Mutualists.

Between 15 and 31% of residents in the 19 participating states are classified as Pluralists. States with a greater percentage of these individuals include Wyoming, North Dakota, and South Dakota. Percentages of Distanced individuals across all states is relatively low (6 to 19%). California has the highest percentage of people classified as such, while South Dakota, Montana, and Alaska report the lowest.

Figure II.B.3. Percent of utilitarian wildlife value orientation type by state.

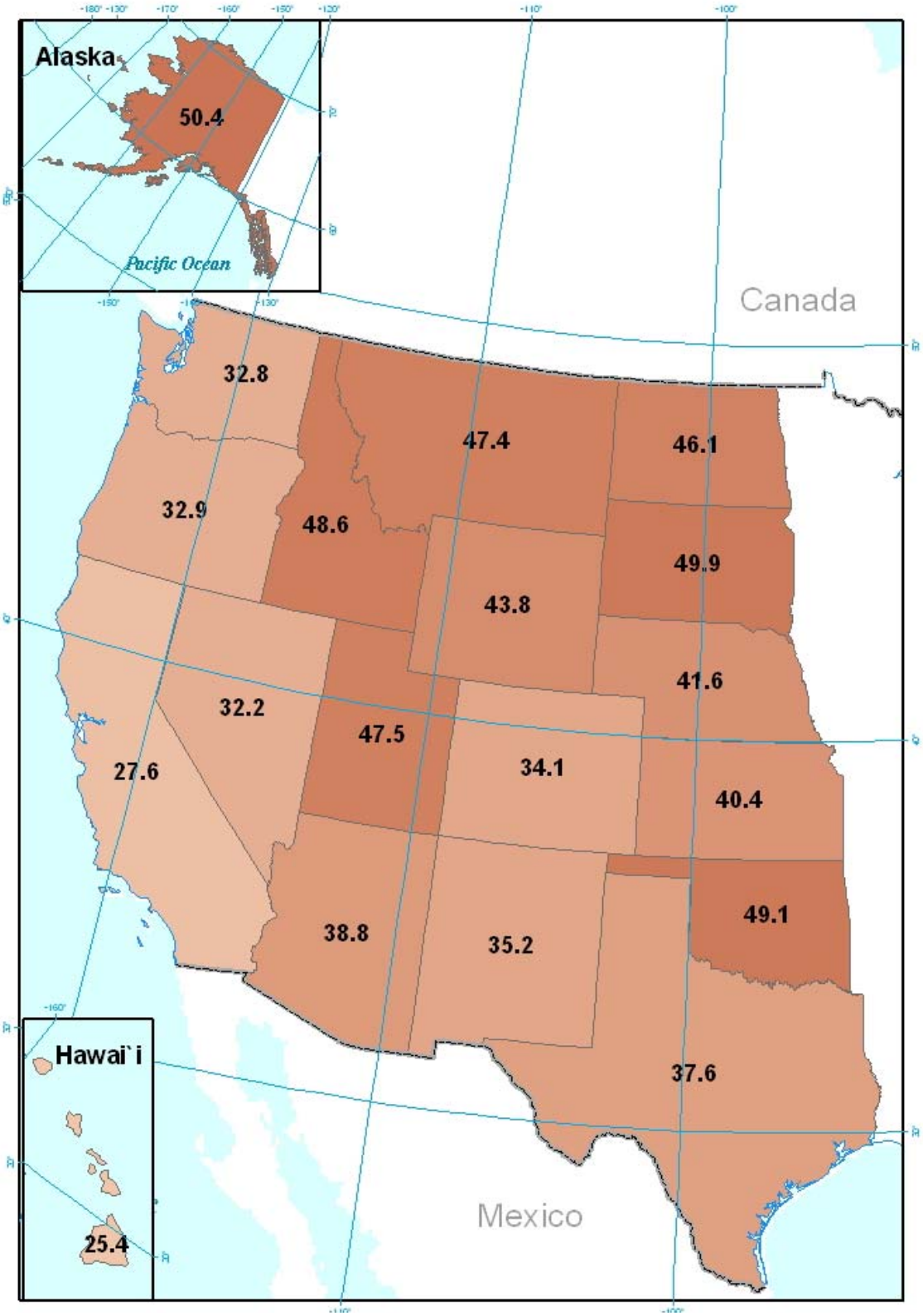


Figure II.B.4. Percent of mutualist wildlife value orientation type by state.

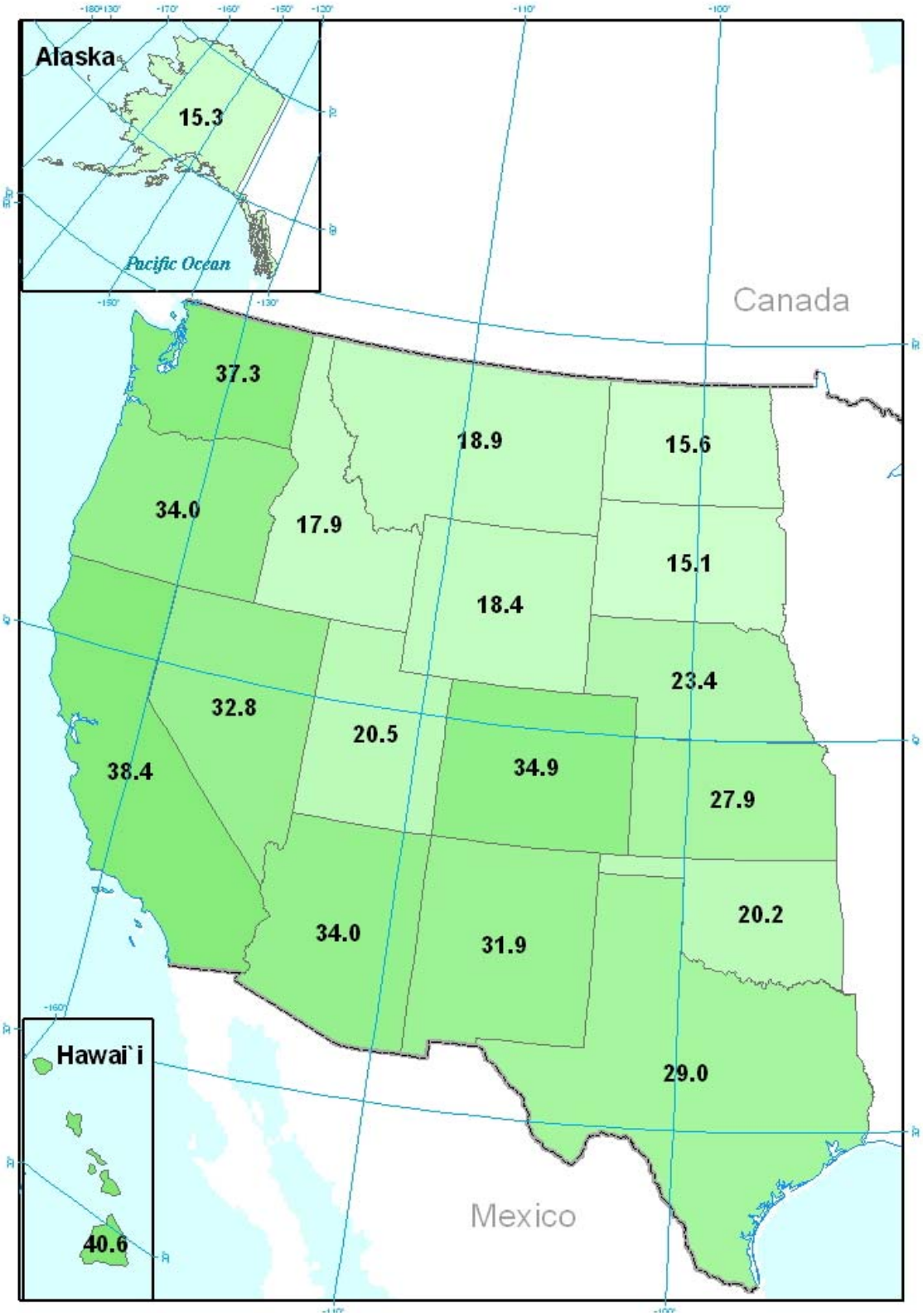


Figure II.B.5. Percent of pluralist wildlife value orientation type by state.

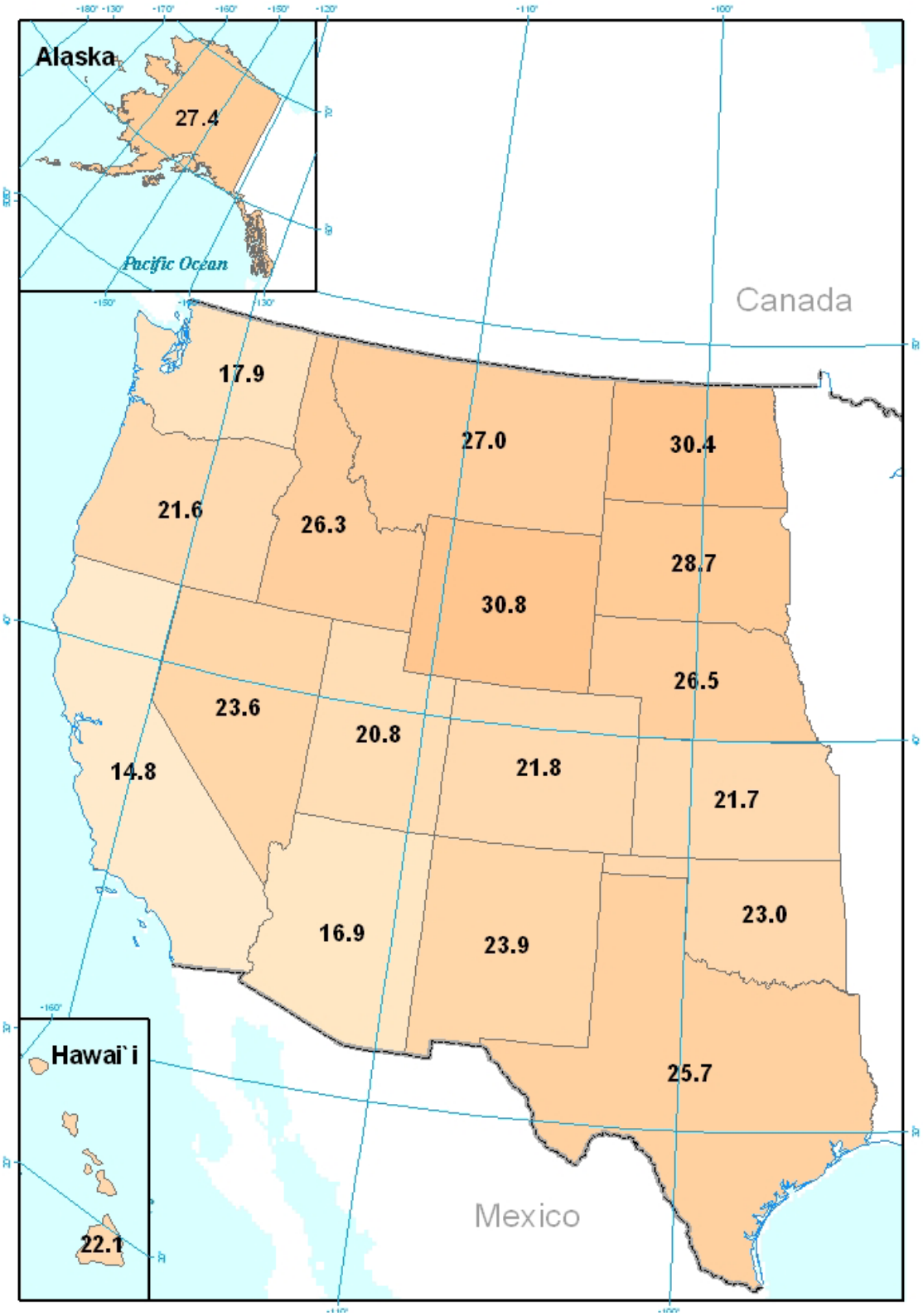
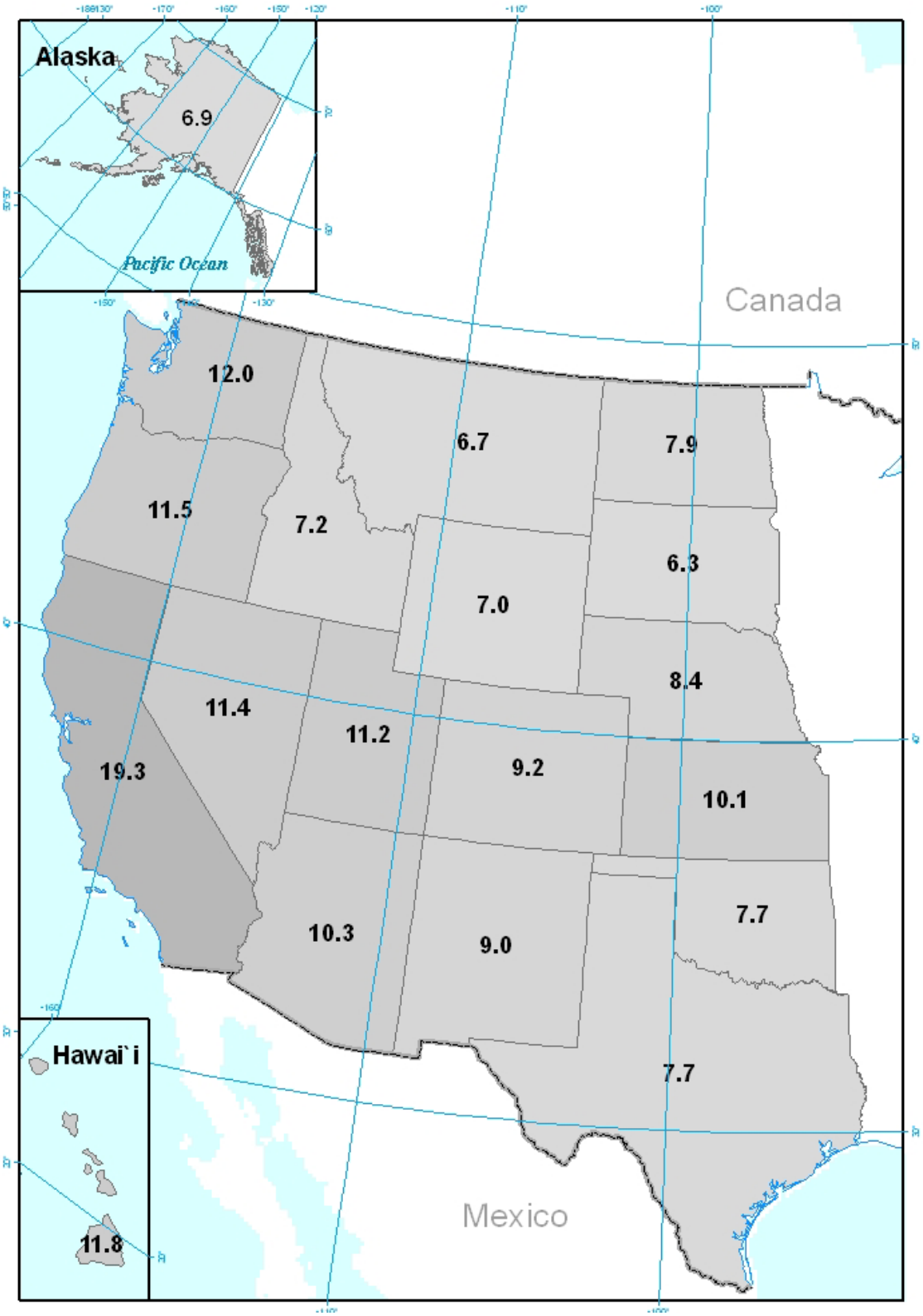


Figure II.B.6. Percent of distanced wildlife value orientation type by state.



Description of Value Orientation Types by Sociodemographics and Lifestyle Characteristics

Beyond knowing the distribution of value orientation types within and across states, it is important to be able to describe who these people are to better understand how they can be reached for purposes of communication and assurance of representation in agency decisions.

Figures II.B.7 through II.B.17 describe the four value orientation types at the regional level (all states combined) on the basis of sociodemographic and lifestyle characteristics, including participation in wildlife-related recreation activities. Tables A-1 through A-14 in Appendix A provide more detail for these comparisons.

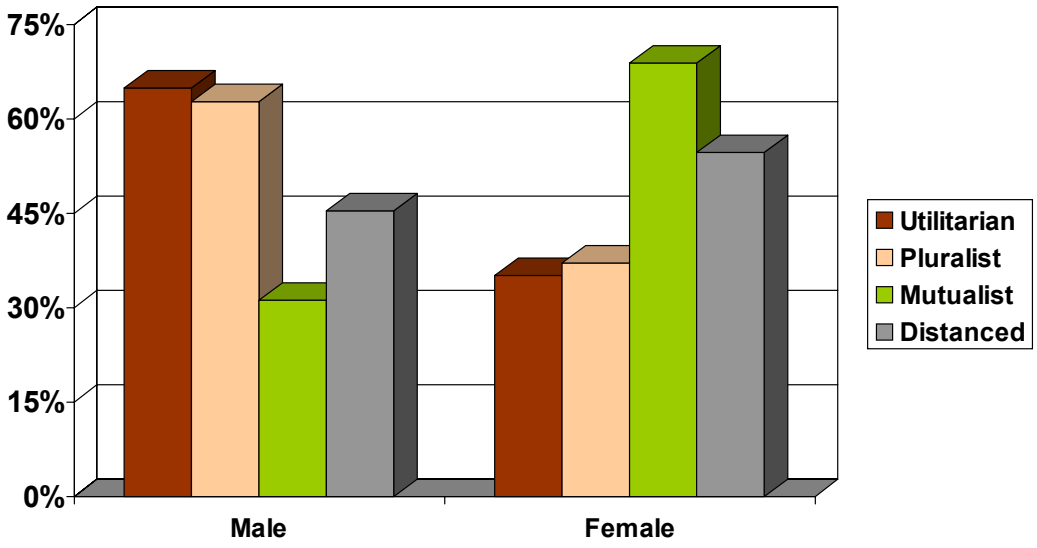
These comparisons indicate that Utilitarians and Pluralists possess similar sociodemographic characteristics and are different from Mutualists and Distanced individuals on certain variables. Utilitarians and Pluralists are more likely than the other two groups of people to be male and also tend to be slightly older on average and to have lived in the state for a longer period of time. The value orientation types do not appear to differ substantially on education, income, or size of current and childhood residence.

A small difference is noted with respect to how the value orientation types score on the attraction and concern for safety belief dimensions. Distanced individuals are more likely to express concern for safety and less likely to score high on the attraction dimension. This may provide some support for our contention that the Distanced individuals are less interested in wildlife and wildlife-related issues.

The main thing to note about differences across value orientation types in participation in wildlife-related recreation relates to hunting. Mutualists and Distanced individuals are less likely to indicate past and current involvement in hunting and are also less likely than the other two groups to express interest in participating in this activity in the future.

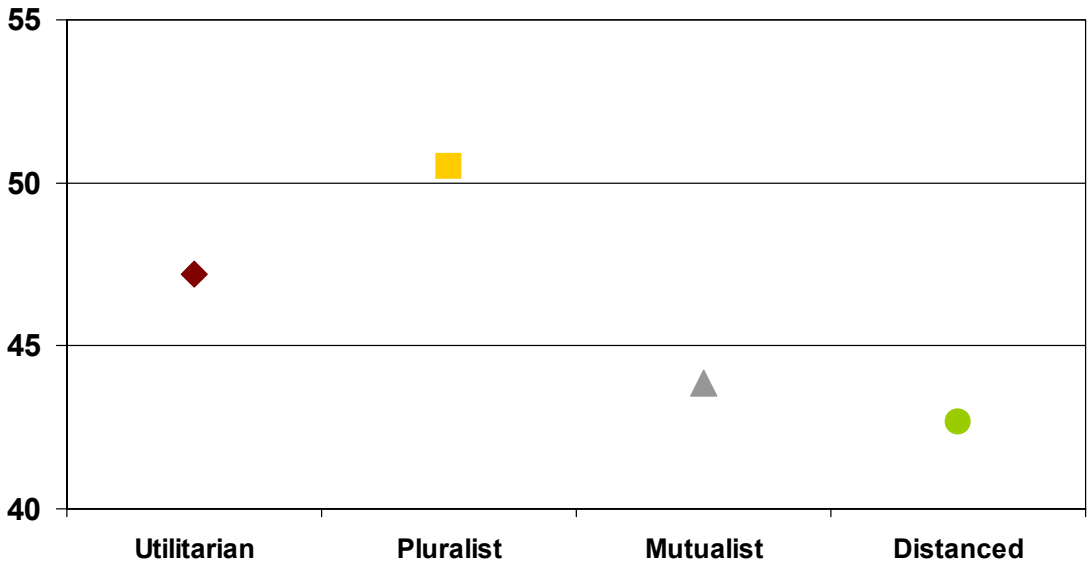
See Section III and Tables A-18 through A-33 in Appendix A for information on how the four wildlife value orientation types differ with respect to responses to regional management issues examined in the survey.

Figure II.B.7. Gender by wildlife value orientation type for the region.



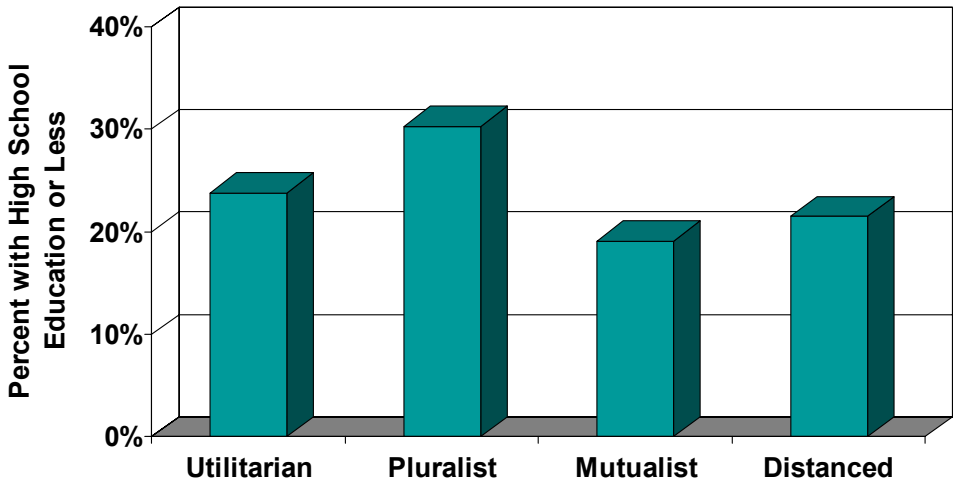
Cramer's V = .30 ("moderate" association)

Figure II.B.8. Average age by wildlife value orientation type for the region.



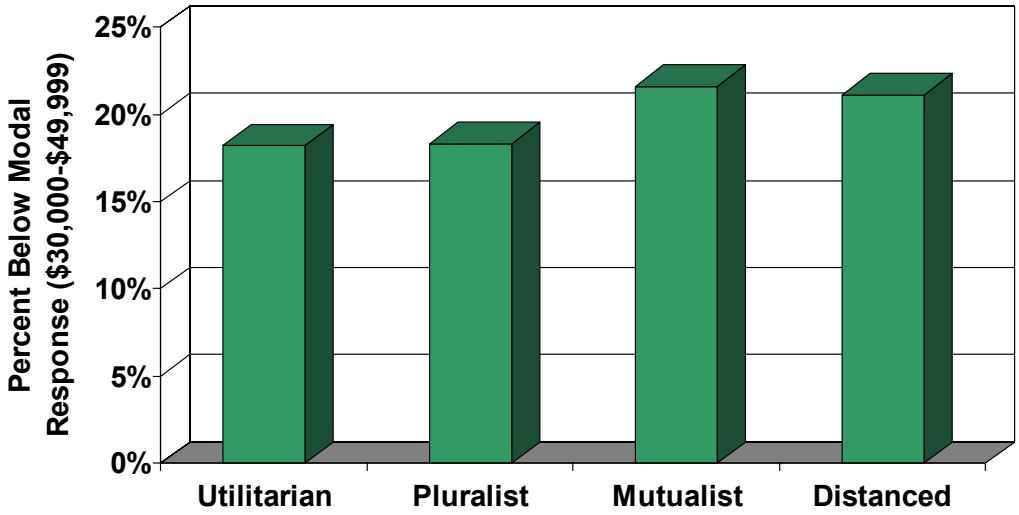
Eta = .16 ("small" effect)

Figure II.B.9. Education by wildlife value orientation type for the region.



Cramer's V = .08 ("negligible" to "weak" association)

Figure II.B.10. Income by wildlife value orientation type for the region.



Cramer's V = .08 ("negligible" to "weak" association)

Figure II.B.11. Average length of residency by wildlife value orientation type for the region.

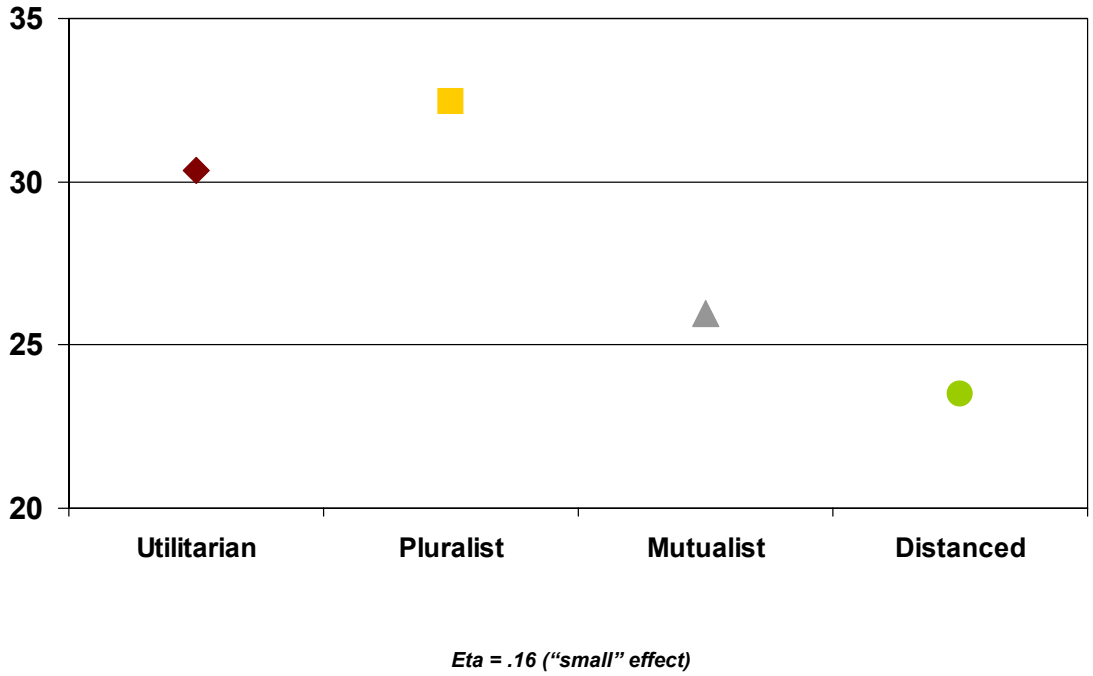


Figure II.B.12. Current and childhood size of residence by wildlife value orientation type for the region.

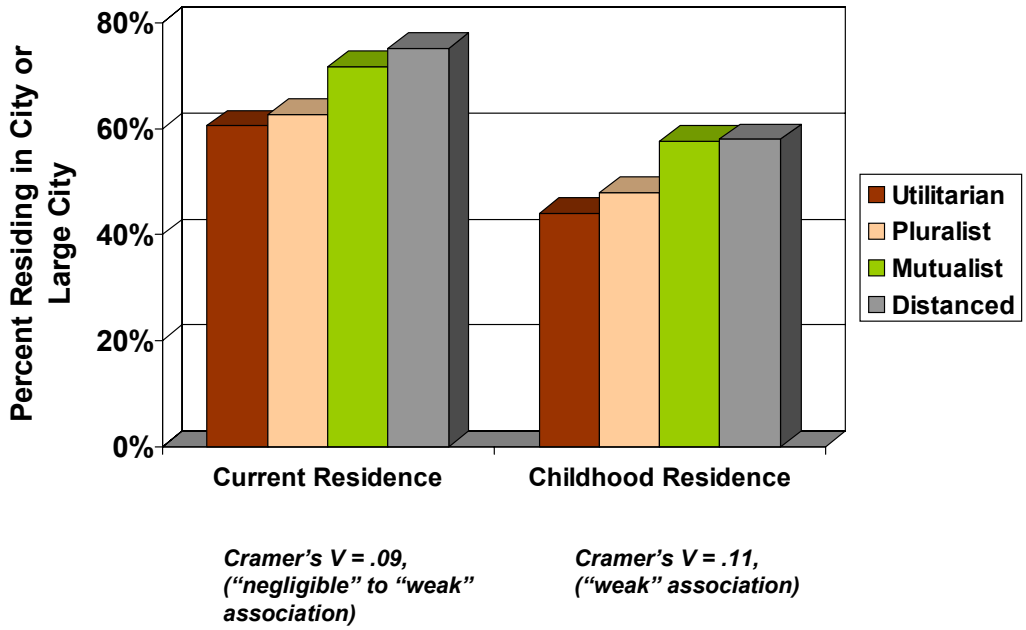
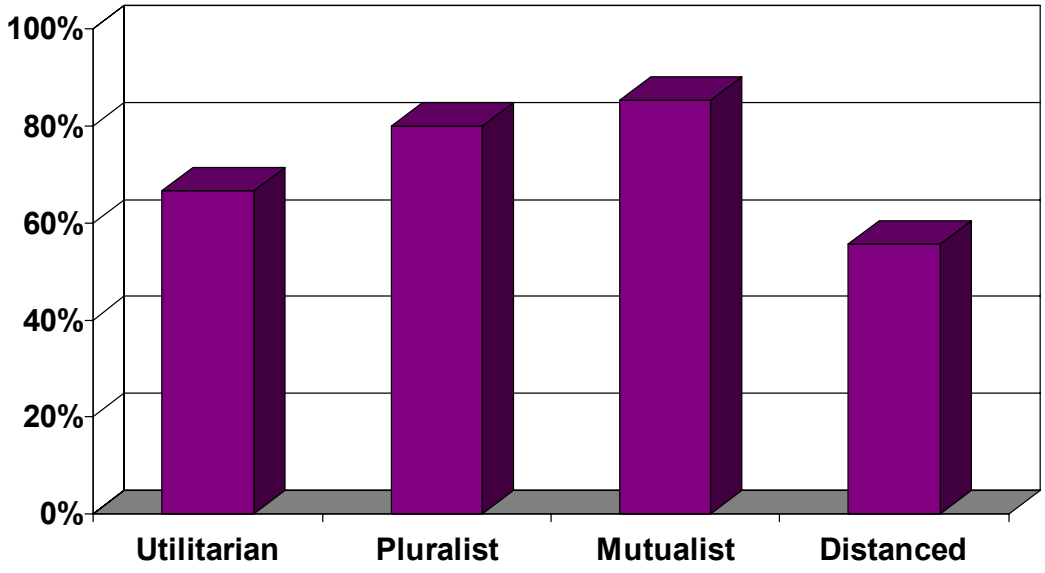


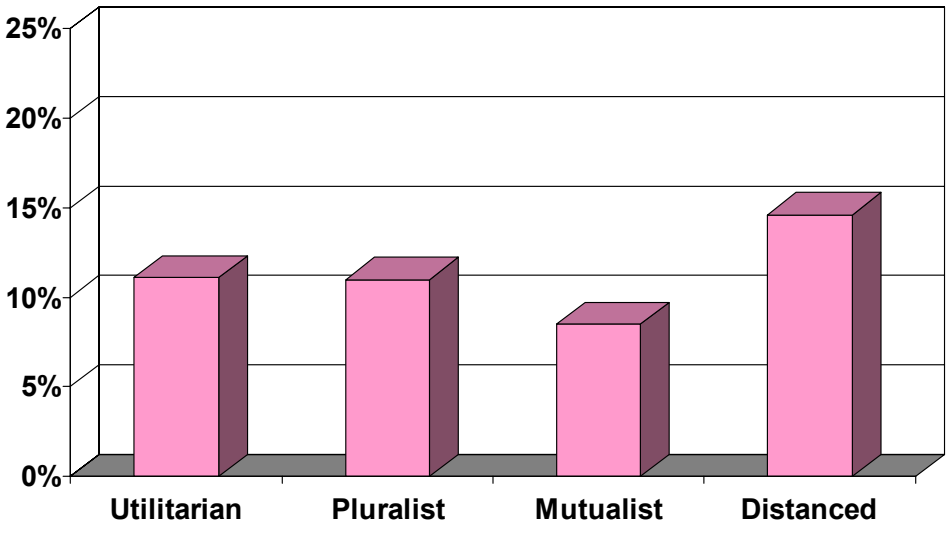
Figure II.B.13. Percent scoring "high"[1] on attraction basic wildlife belief dimension by wildlife value orientation type for the region.



Eta = .26 ("medium" effect)

[1]"High" defined by score of > 4.5 on mean composite belief dimension scale.

Figure II.B.14. Percent scoring "high" [1] on concern for safety basic wildlife belief dimension by wildlife value orientation type for the region.



Eta = .14 ("small" effect)

[1]"High" defined by score of > 4.5 on mean composite belief dimension scale.

Figure II.B.15. Past participation in wildlife-related recreation by wildlife value orientation type for the region.

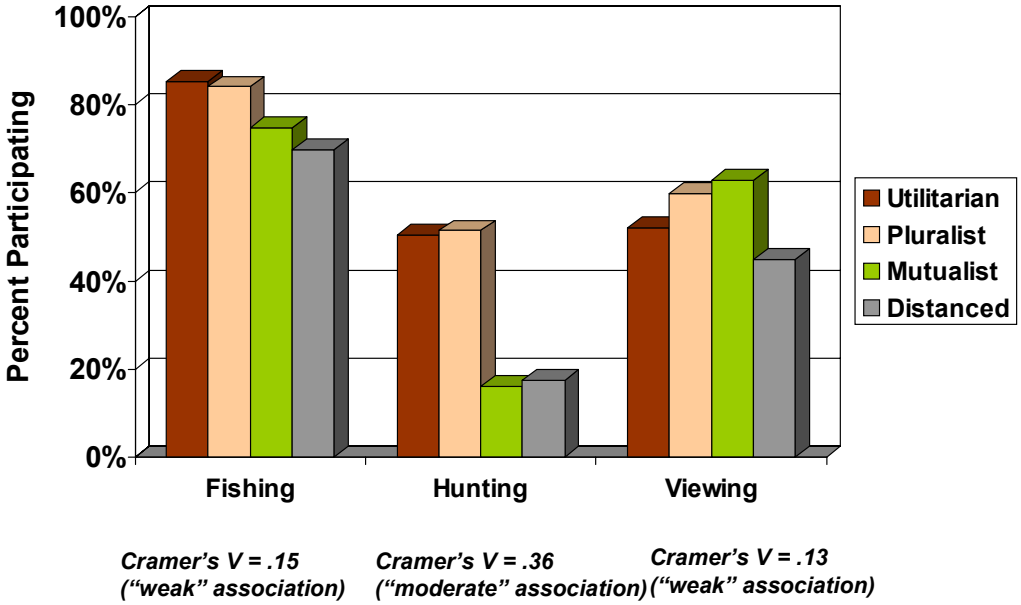


Figure II.B.16. Current participation (last 12 months) in wildlife-related recreation by wildlife value orientation type for the region.

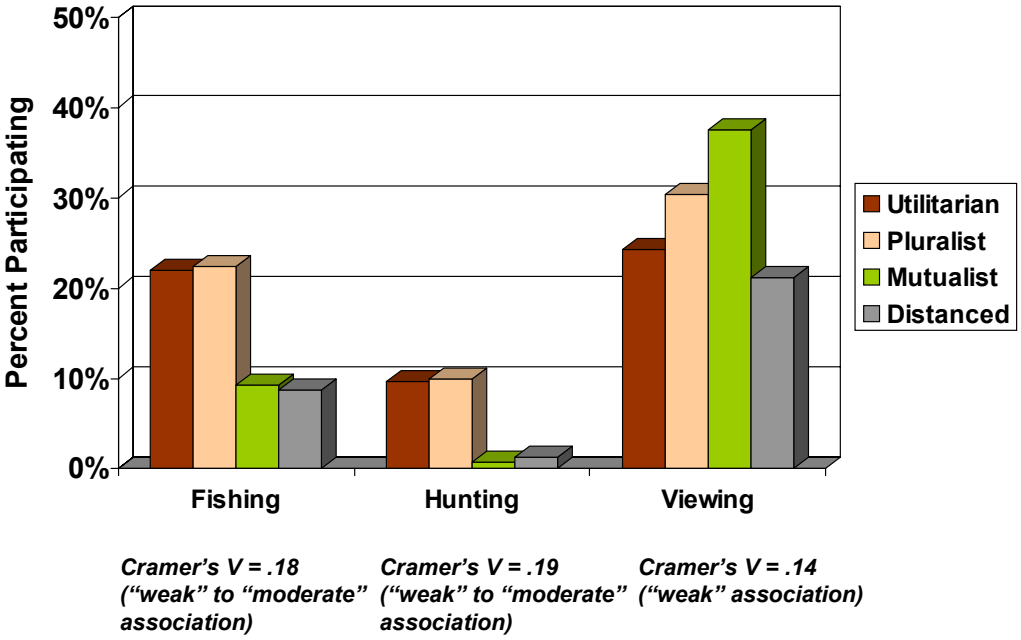
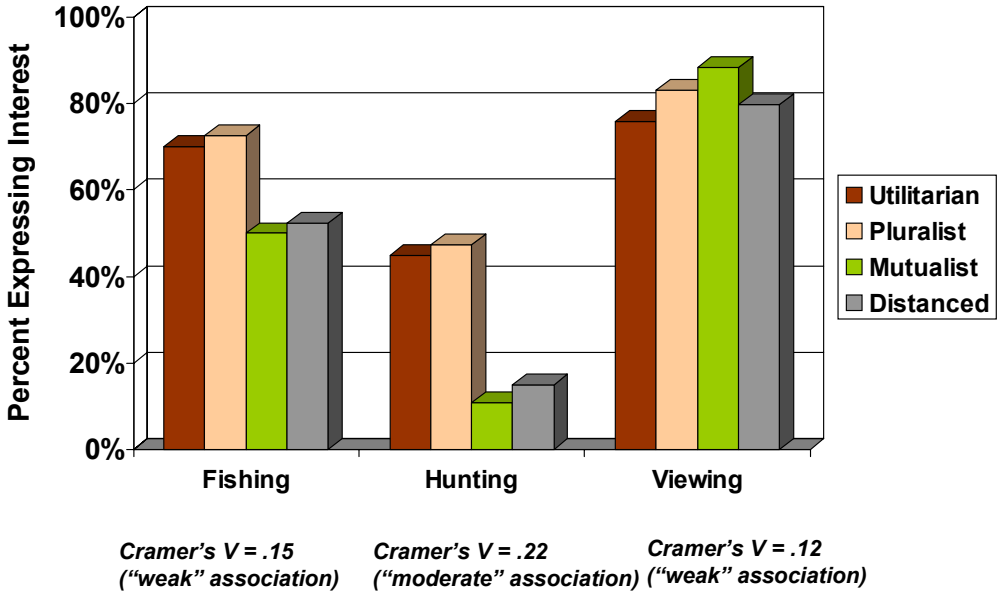


Figure II.B.17. Interest[1] in future participation in wildlife-related recreation by wildlife value orientation type for the region.



[1]Interest defined by scoring of greater than 1 on the original response scale ranging from 1 = "not at all interested" to 4 = "strongly interested."

REFERENCES

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall, Inc..

Bright, A. D., Manfredo, M. J., & Fulton, D. C. (2000). Segmenting the public: An application of value orientations to wildlife planning in Colorado. *Wildlife Society Bulletin*, *28*(1), 218-226.

Bryan, H. (1980). Sociological and psychological approaches for assessing and categorizing wildlife values. In W. W. Shaw & E. H. Zube (Eds.), *Wildlife values* (Rep. No. 1, pp. 70-76). Tucson, AZ: Center for Assessment of Noncommodity Natural Resource Values, University of Arizona.

DeRuiter, D. S., & Donnelly, M. P. (2002). A qualitative approach to measuring determinants of wildlife value orientations. *Human Dimensions of Wildlife*, *7*, 251-271.

Feather, N. T. (1990). Bridging the gap between values and actions: Recent applications of the expectancy-value model. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition* (v. 2, pp. 151-192). New York: The Guilford Press.

Fulton, D. C., Manfredo, M. J., & Lipscomb, J. (1996). Wildlife value orientations: A conceptual and measurement approach. *Human Dimensions of Wildlife, 1*(2), 24-47.

Hendee, J. C. (1969). Appreciative versus consumptive uses of wildlife refuges: Studies of who gets what and trends in use. *Transactions of the North American Wildlife and Natural Resource Conference, 34*, 252-264.

Hendee, J. C. (1974). A multiple-satisfaction approach to game management. *Wildlife Society Bulletin*, 2, 104-113.

Homer, P. H., & Kahle L. R. (1988). A structural equation test of the value-attitude-behavior hierarchy. *Journal of Personality and Social Psychology, 54*, 638-646.

Inglehart, R. (1990). *Culture shift in advanced industrial societies*. Princeton, NJ: Princeton University Press.

Kellert, S. R. (1976). Perceptions of animals in American society. *Transactions of the North American Wildlife and Natural Resources Conference, 41,* 533-545.

Kellert, S. R. (1980). Contemporary values of wildlife in American society. In W. W. Shaw & E. H. Zube (Eds.), Wildlife values (Rep. No. 1, pp. 31-60). Tucson, AZ: Center for Assessment of Noncommodity Natural Resource Values, University of Arizona.

King, R. T. (1947). The future of wildlife in forest land use. *Transactions of the North American Wildlife Conference, 12,* 454-467.

Manfredo, M. J., & Fulton, D. (1997). A comparison of wildlife values in Belize and Colorado. *Human Dimensions of Wildlife*, *2*(2), 62-63.

Manfredo, M. J., Pierce, C. L., Fulton, D., Pate, J., & Gill, B. R. (1999). Public acceptance of wildlife trapping in Colorado. *Wildlife Society Bulletin*, *27*(2), 499-508.

Manfredo, M. J., Sneegas, J. J., Driver, B., & Bright, A. (1989). Hunters with disabilities: A survey of wildlife agencies and a case study of Illinois deer hunters. *Wildlife Society Bulletin, 17,* 487-493.

Manfredo, M. J., & Zinn, H. C. (1996). Population change and its implications for wildlife management in the new west: A case study of Colorado. *Human Dimensions of Wildlife*, *1*(3), 62-74.

Manfredo, M. J., Zinn, H. C., Sikorowski, L., & Jones, J. (1998). Public acceptance of mountain lion management: A case study of Denver, Colorado, and nearby foothills areas. *Wildlife Society Bulletin, 26*(4), 964-970.

Minnis, D. L. (1998). Wildlife policy-making by the electorate: An overview of citizen-sponsored ballot measures on hunting and trapping. *Wildlife Society Bulletin 26*(1), 75-83.

Purdy, K. E., & Decker, D. J. (1989). Applying wildlife values information in management: The wildlife attitudes and values scale. *Wildlife Society Bulletin, 17,* 494-500.

Rokeach, M. (1973). *The nature of human values*. New York: The Free Press.

Rolston, H., III. (1979). *Values in nature* (Typescript). Fort Collins, CO: Colorado State University.

Schwartz, S.H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology, 25,* 1-65.

Shaw, W. W. (1974). Meanings of wildlife for Americans: Contemporary attitudes and social trends. *Transactions of the North American Wildlife and Natural Resources Conference, 39,* 151-155.

Shaw, W. W. (1987). Problems in wildlife valuation in natural resource management. *In* G. L. Peterson and A. Randall (Eds.), *Valuation of wildland resource benefits* (pp. 221-230). Boulder, CO: Westview Press.

Shaw, W. W. & Zube, E. H. (Eds.). (1980). *Wildlife values* (Rep. No. 1). Tucson, AZ: Center for Assessment of Noncommodity Natural Resource Values, University of Arizona.

Steinhoff, H.W. (1980). Analysis of conceptual systems for understanding and measuring wildlife values. In W.W. Shaw, & E.H. Zube (Eds.), *Wildlife Values* (Rep. No. 1, pp. 11-21). Tucson, AZ: Center for Assessment of Noncommodity Natural Resource Values, University of Arizona.

Stern, P.C., Dietz, T., Kalof, L., & Guagnano, G.A. (1995). Values, beliefs, and pro-environmental action: Attitude formation toward emergent attitude objects. *Journal of Applied Social Psychology, 25(18),* 1611-1636.

Tarrant, M. A., Bright, A. D., & Cordell, H. K. (1997). Attitudes toward wildlife species protection: Assessing moderating and mediating effects in the value-attitude relationship. *Human Dimensions of Wildlife, 2*(2), 1-20.

Teel, T. L., Manfredo, M. J., Bright, A. D., & Dayer, A. A. (2004, January 30). *Contribution of human dimensions information to the development of state Comprehensive Wildlife Conservation Strategies.* Powerpoint presentation distributed to member states in the Western Association of Fish and Wildlife Agencies. Fort Collins, CO: Colorado State University, Human Dimensions in Natural Resources Unit.

Tetlock, P. E. (1986). A value pluralism model of ideological reasoning. *Journal of Personality and Social Psychology, 50,* 819-827.

Whittaker, D. (2000). *Evaluating urban wildlife management actions: An exploration of antecedent cognitive variables*. Dissertation. Fort Collins, CO: Colorado State University.

Zinn, H.C., Manfredo, M.J., & Barro, S.C. (2002). Patterns of wildlife value orientations in hunters' families. *Human Dimensions of Wildlife, 7*(3), 147-162.

Zinn, H. C., Manfredo, M. J., Vaske, J. J., & Wittmann, K. (1998). Using normative beliefs to determine the acceptability of wildlife management actions. *Society & Natural Resources, 11*, 649-662.

SECTION III. WILDLIFE VALUE ORIENTATION SHIFT

[RESULTS FOR STUDY OBJECTIVE 3]

Wildlife professionals generally assume that societal-level thought regarding wildlife changed dramatically over the latter half of the twentieth century. It is believed that there has been a gradual shift away from traditional orientations toward wildlife that emphasize the use and management of wildlife for human benefit. This trend is purportedly one of the most influential factors shaping wildlife management today. It is believed to be associated, for example, with the pervasive stakeholder conflict inherent in contemporary wildlife management issues, declining hunting participation (Heberlein, 1991), the growth of non-governmental organizations that emphasize "non-traditional" views (Peterson & Manfredo, 1993), and stakeholder intervention in wildlife policy through mechanisms such as ballot initiatives (Minnis, 1998). Wildlife Values in the West was initiated to gain better understanding of this value shift phenomenon, including past trends as well as future direction and possible implications for wildlife management.

A. CONCEPTUAL BACKGROUND

Manfredo, Teel, and Bright (2003) introduced theoretical concepts that offer an explanation for why wildlife value orientations are changing in the U.S. and what this could mean for the future of wildlife management.

Several key points flow from their article:

1. Wildlife value orientation shift is part of a broader set of cultural changes in society.

2. Forces affecting value shift are also driving changes in wildlife value orientations.

3. Wildlife value orientation shift is at the root of declines in hunting and conflict over wildlife management issues.

Each of these points is elaborated on below.

<u>1. Wildlife value orientation shift is part of a broader set of cultural changes in society.</u>

Wildlife value orientation shift is believed to be part of a broader set of cultural changes that include a shift in values. Inglehart (1990; 1997; Inglehart & Baker, 2000) describes these changes in his theory of Materialist/Post-Materialist value shift. He (1990) proposes that change in societal values in post-industrialized nations is a result of shifting need states. Economic development in these nations elevates people from basic human "material" needs (security, shelter, food) to higher order psychological needs which he terms Post-Materialist values (quality of life and self expression). The growth in Post-Materialist values is purportedly associated with increasing emphasis on environmental protection and decreasing trust in governmental institutions.

According to Inglehart's theory, values are formed in the individual at an early age, and changes in values at the societal-level occur over time as a result of intergenerational shift. He proposes that Post-Materialist values arise from the presence of economic and physical security during one's formative years, which is most likely to occur among upper socio-economic classes. Based on these assumptions, Inglehart's theory suggests that the affluence of the post-World War II era fostered a generation of individuals who, in today's society, emphasize Post-Materialist concerns.

The Materialist/Post-Materialist value shift theory is supported by empirical data collected on a global scale (i.e., in 65 societies including more than 75% of the world's population) and across several decades (see Inglehart, 1997; Inglehart & Baker, 2000). These data indicate that individuals with Post-Materialist values tend to have better jobs, more education, and higher incomes than those with a Materialist values set.

Manfredo et al. (2003) propose that the shift away from a traditional utilitarian orientation toward wildlife is rooted in the broader set of cultural changes that Inglehart describes. A gradual shift in need states tied to the expression of Post-Materialist values has fostered a new way of viewing the wildlife resource – i.e., what we term a mutualism value orientation. If there is, in fact, a relationship between these two societal movements, we would expect to find an association between the distribution of Materialist/Post-Materialist values across states and the distribution of wildlife value orientation types. We would also expect there to be a relationship between the latter variable and other concepts tied to Materialist/Post-Materialist value shift – namely, environmentalism and trust in government.

Our specific hypotheses in this context were as follows:

H1: *States with a higher proportion of Materialists also have higher percentages of Utilitarians. Similarly, states with a higher proportion of Post-Materialists have higher percentages of Mutualists.*

H2: *States with a higher proportion of Mutualists have higher levels of environmentalism.*

H3: *States with a higher proportion of Mutualists have lower levels of trust in government.*

2. Forces affecting value shift are also driving changes in wildlife value orientations.

An enduring emphasis embedded in many cultural change theories is the preeminent effect of a society's economic system and its interplay with technology, demography, institutions and the environment (Buttel & Humphrey, 2002; Harris, 1999; Smith & Young, 1998). Within these models, broad-based cultural values and ideology are the result, not the cause, of interplay among these cultural and environmental factors (Harris, 1999). Manfredo et al. (2003) contend that certain "driving forces" of cultural change outlined by these theories are also driving a shift away from a traditional utilitarian orientation toward wildlife.

We tested for the effects of these forces on the representation of wildlife value orientation types at the state level. They included income, education, and urbanization. Income (as an indicator of

economic advancement) and education are factors that are central to Inglehart's theory on Materialist/Post-Materialist value shift. Greater levels of affluence and education have fostered a greater emphasis on Post-Materialist concerns in our society. Thus, we would expect that income and education are also tied to the shift toward a mutualism value orientation toward wildlife.

We propose that wildlife value orientation shift has also in part been driven by urbanization. This contention is based on concepts introduced by Bell (1973) who suggested that world views in post-industrialized society have shifted due to broad-scale occupational changes and technological advancements. These changes have affected day-to-day experiences, which in turn have had a profound effect on world views. Using Bell's terminology, rural world views reflect "a game against nature" due to the presence of a more resource-dependent economy in rural areas. Urban areas, due to higher employment in industrial and service occupations, would alternatively represent world views focused on "a game against fabricated nature" and "a game against other people." Bell's proposals are consistent with literature highlighting the association between urbanization and the growth of environmental values in postwar America (e.g., Hays, 1987; Mertig, Dunlap, & Morrison, 2002).

Based on this information, we developed the following hypothesis:

H4: *Income, education, and urbanization are positively related to the proportion of Mutualists in a state and negatively related to the proportion of Utilitarians in a state.*

<u>3. Wildlife value orientation shift is at the root of declines in hunting and conflict over wildlife management issues.</u>

Wildlife value orientations affect wildlife-related attitudes and behaviors, including participation in wildlife-related recreation activities and responses to management strategies (Fulton, Manfredo, & Lipscomb, 1996). A shift in wildlife value orientations therefore has implications for wildlife-related recreation trends as well as public acceptance of wildlife management strategies.

Manfredo et al. (2003) and Teel (2004) argue that the erosion of a traditional utilitarian orientation toward wildlife is responsible for declines in hunting evident across states and for declines in the acceptance of certain management actions associated with the treatment of wildlife (e.g., lethal control). We explored these ideas through an examination of the relationship between wildlife value orientation types and the percent of hunters at the state level, and also the individual-level relationship between wildlife value orientation types and responses to selected management issues.

Below are our hypotheses in this investigation.

H5: *States with a higher proportion of Utilitarians have a higher proportion of hunters.*

H6: *Wildlife value orientation types differ with respect to their responses to certain management issues, particularly those dealing with treatment of animals.*

B. RELATIONSHIP BETWEEN MATERIALIST/POST-MATERIALIST VALUES AND WILDLIFE VALUE ORIENTATION TYPES

The first hypothesis outlined above is based on how the current distribution of wildlife value orientation types across states may be tied to broad, societal-level changes that have occurred gradually over time. To the extent that wildlife value orientation shift is linked to a broader value shift in this country, we would expect similar patterns across states to emerge in the distribution of values and wildlife value orientation types.

Two comparisons were made at the state level to explore the relationship between patterns in values and wildlife value orientations:

1. Comparison of the Proportion of Materialists to the Proportion of Utilitarians

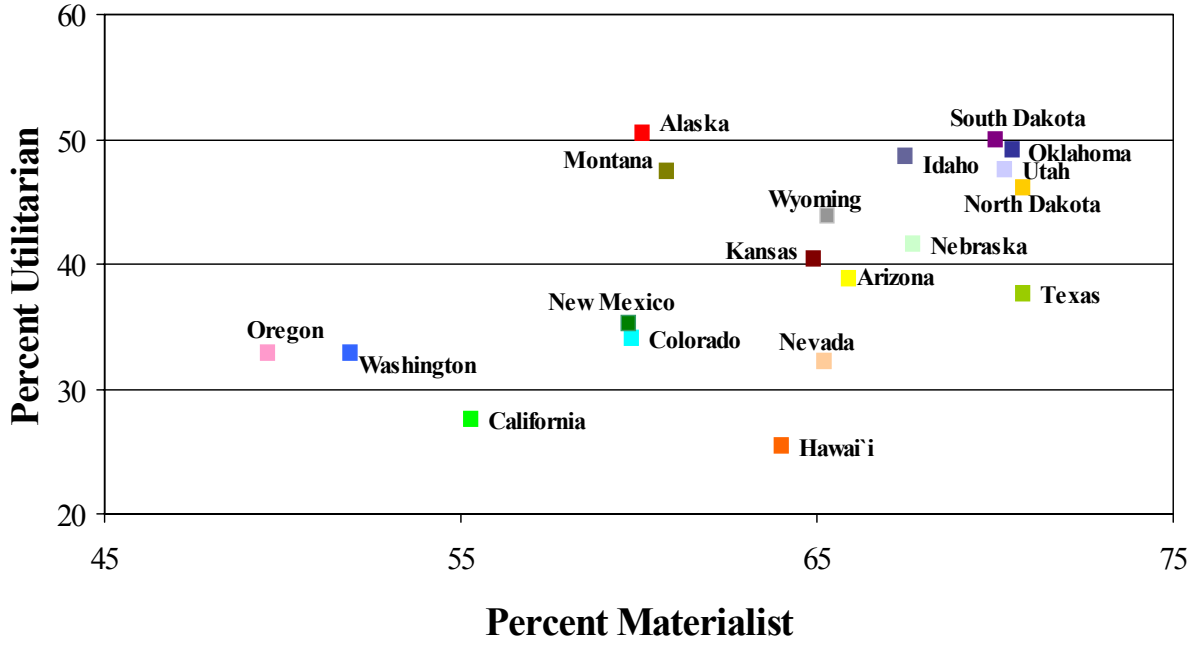
We contend that a gradual shift in contemporary society away from Materialist concerns is linked to the erosion of a traditional utilitarian orientation toward wildlife. If our assumption is correct, we would expect to find a positive relationship at the state level between the percent of people with Materialist values and the percent of people classified as Utilitarians. Figure III.B.1 displays a graphical depiction of this comparison. Indeed, we were able to demonstrate a positive relationship ($r = .55$) between these variables.

2. Comparison of the Proportion of Post-Materialists to the Proportion of Mutualists

As society moves toward emphasis on Post-Materialist concerns, we also see a new way of thinking about wildlife emerging in the form of a mutualism value orientation. If wildlife value orientation shift is part of the broader societal movement that Inglehart describes, we would expect to find a positive relationship at the state level between the proportion of people with Post-Materialist values and the percent of Mutualists. Our expectation is confirmed as shown in Figure III.B.2 ($r = .62$).

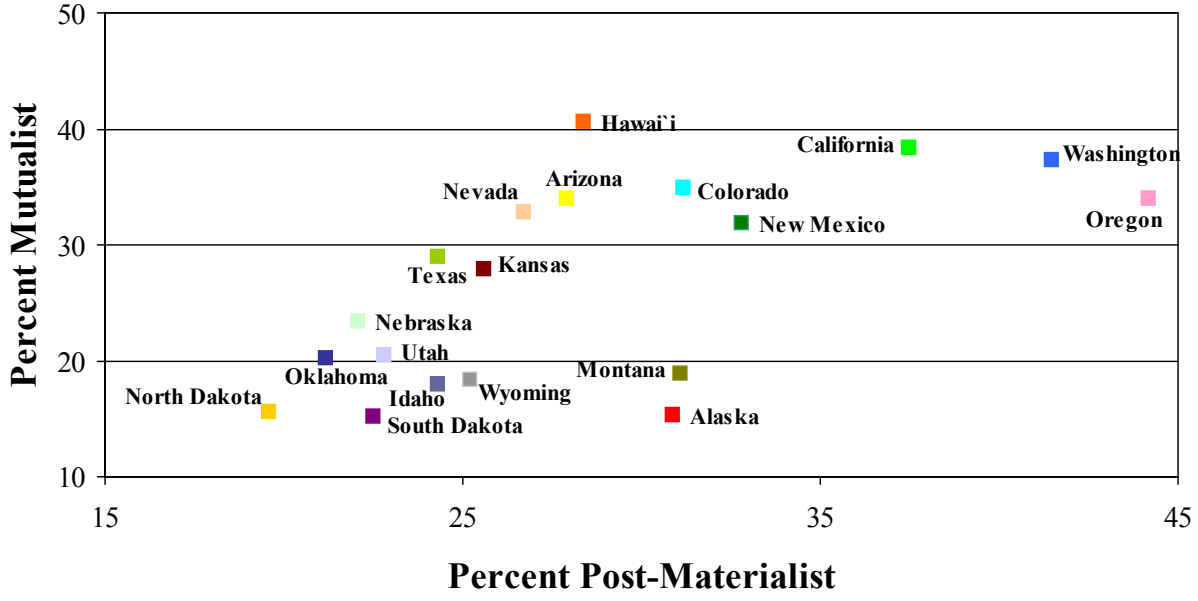
The results of these two comparisons are consistent with our first hypothesis and with the contention that values and wildlife value orientations may be changing along a similar trajectory.

Figure III.B.1. Percent of Utilitarians by percent of Materialists across states.



r = .55 ("large" effect)

Figure III.B.2. Percent of Mutualists by percent of Post-Materialists across states.



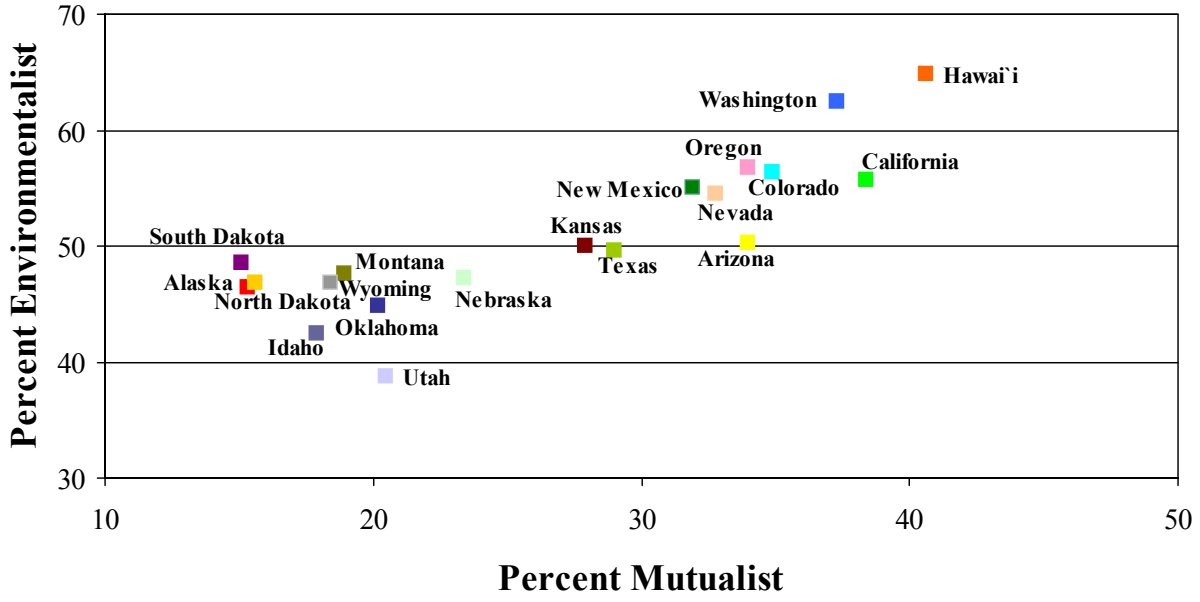
r = .62 ("large" effect)

C. RELATIONSHIP BETWEEN WILDLIFE VALUE ORIENTATION TYPES AND THE CONCEPTS ENVIRONMENTALISM AND TRUST IN GOVERNMENT

Inglehart argues that the shift toward greater emphasis on Post-Materialist concerns in our society is related to the growth in environmentalism and decreasing trust in governmental institutions. If wildlife value orientation shift is part of a broader set of cultural changes that include movement toward expression of Post-Materialist values, we would expect there to be a relationship between value orientations and these other variables – i.e., environmentalism and trust. Specifically, as stated in Hypotheses 2 and 3, we would expect that states with a higher proportion of Mutualists would display higher levels of environmentalism and lower levels of trust in government relative to other states.

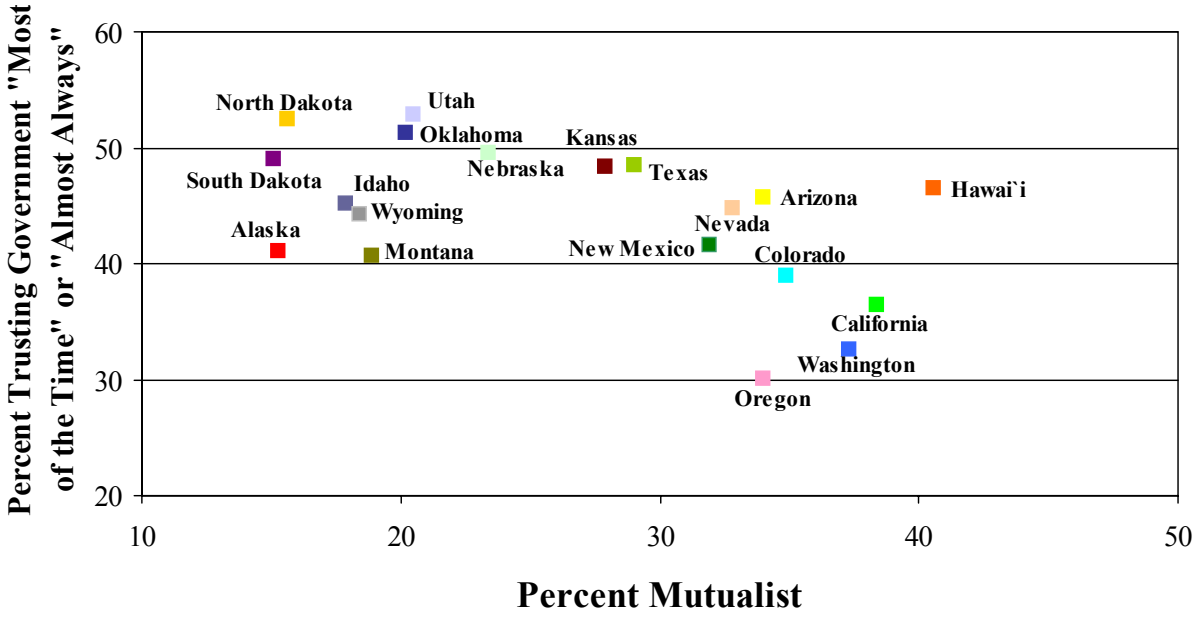
Figures III.C.1 through III.C.4 provide graphical displays of the hypothesized relationships. As is evident in these graphs, a greater percentage of Mutualists in a state is in fact linked to a greater proportion of people with environmentalist values (r = .85; also see Table A-15 in Appendix A; for more information on measurement of this concept, see Appendix B) and a lower percentage of people expressing trust in governmental institutions (r = -.52 to -.68).

Figure III.C.1. Percent of Mutualists by percent of Environmentalists across states.



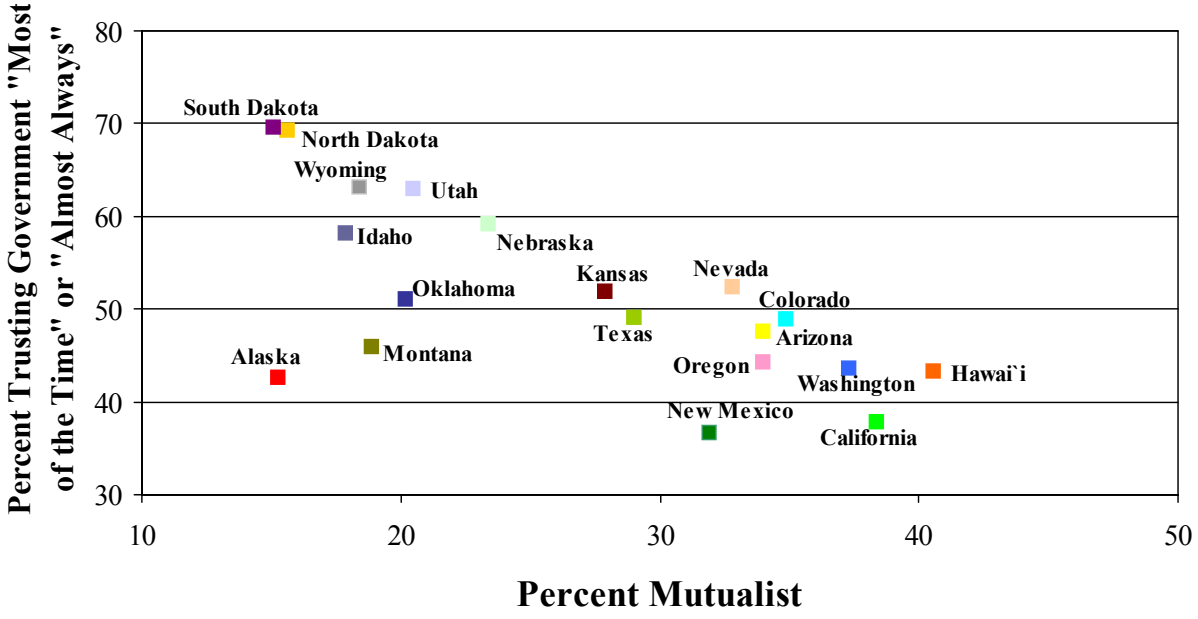
r = .85 ("large" effect)

Figure III.C.2. Percent of Mutualists by trust in *federal* government across states.



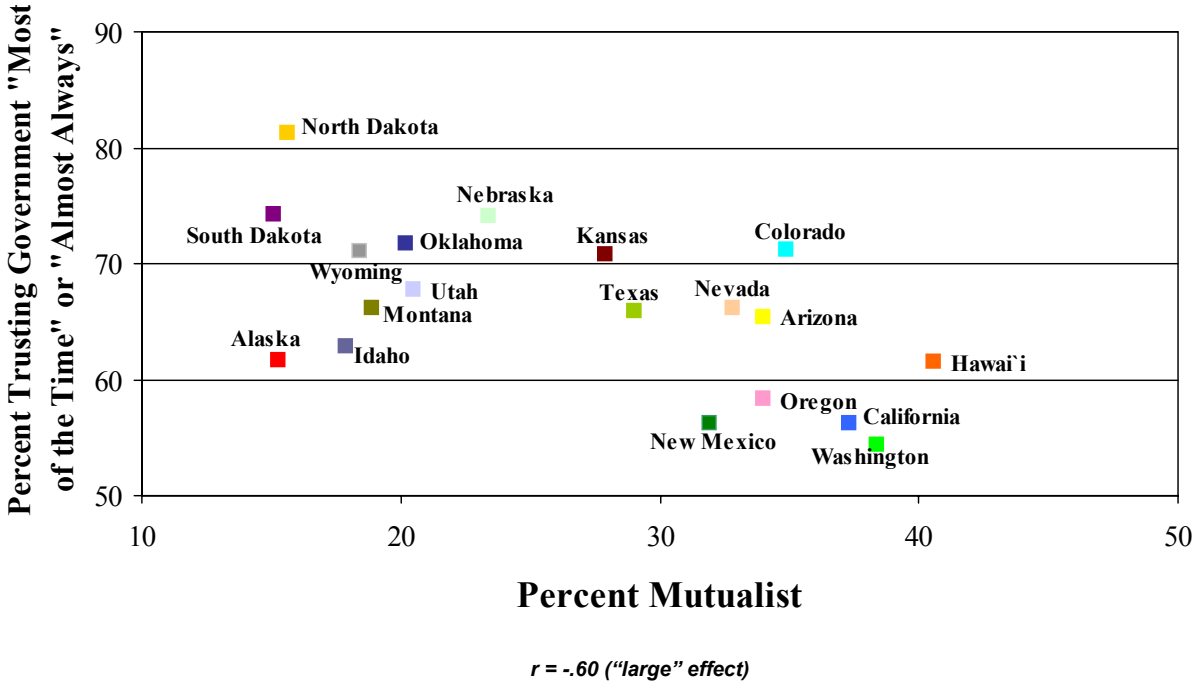
r = -.52 ("large" effect)

Figure III.C.3. Percent of Mutualists by trust in *state* government across states.



r = -.68 ("large" effect)

Figure III.C.4. Percent of Mutualists by trust in the state fish and wildlife agency across states.



D. FACTORS AFFECTING WILDLIFE VALUE ORIENTATION SHIFT

The next step in our investigation focused on whether or not the cultural conditions believed to be at the root of value shift also affect the composition of wildlife value orientations across states. We explored this idea by conducting state-level analysis to examine the effects of income, education, and urbanization on the distribution of wildlife value orientation types across states. As stated in Hypothesis 4, we expected these "driving forces" of cultural change to be negatively related to the percent of Utilitarians in a state and positively related to the percent of Mutualists.

Figures III.D.1 and III.D.2 confirm our expectations regarding income in that the percent of Utilitarians in a state is inversely related to this variable (r = -.69), while the percent of Mutualists is positively related to it (r = .75). State-level income for purposes of these comparisons was represented by the percent of people within a state above the modal response category ($30,000-$49,999) for the entire western region (i.e., all states combined).

Also consistent with our hypothesis, the relationship between the proportion of Utilitarians and the percent of people in a state who have a high school education or less is positive (r = .75; Figure III.D.3), suggesting that lower levels of education are associated with higher percentages of Utilitarians. The direction of the relationship is reversed when looking at the percent of Mutualists in a state (r = -.82; Figure III.D.4).

Figure III.D.1. Percent of Utilitarians by income across states.

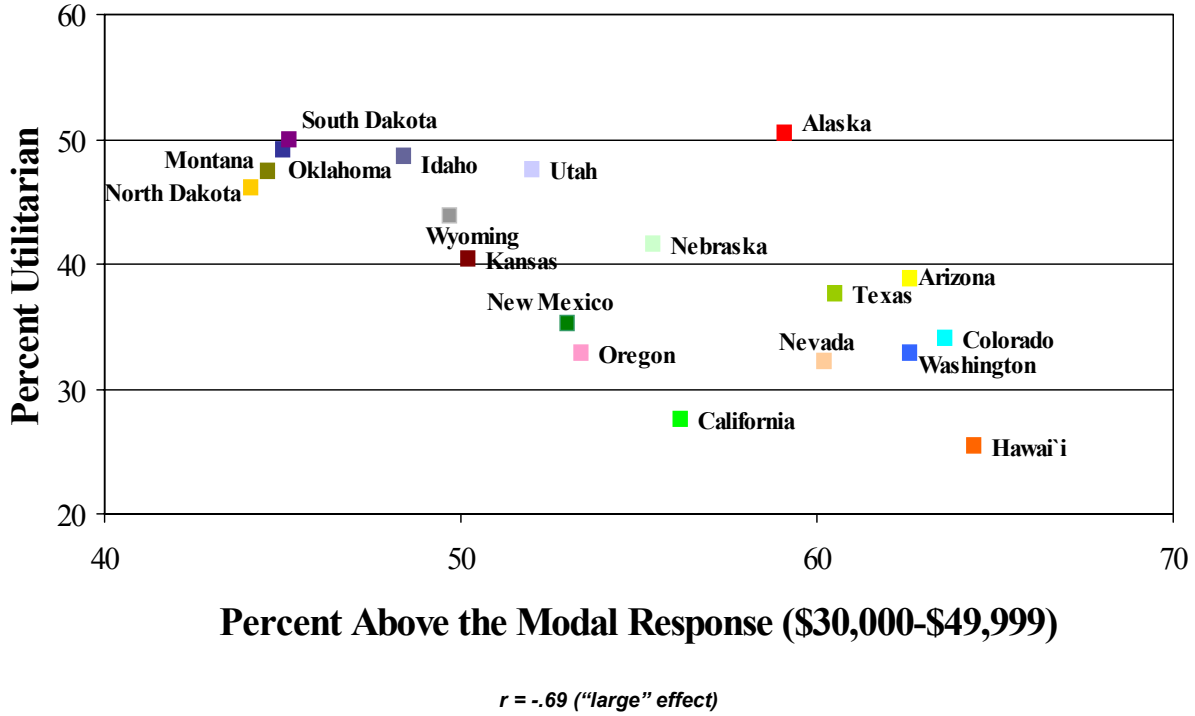


Figure III.D.2. Percent of Mutualists by income across states.

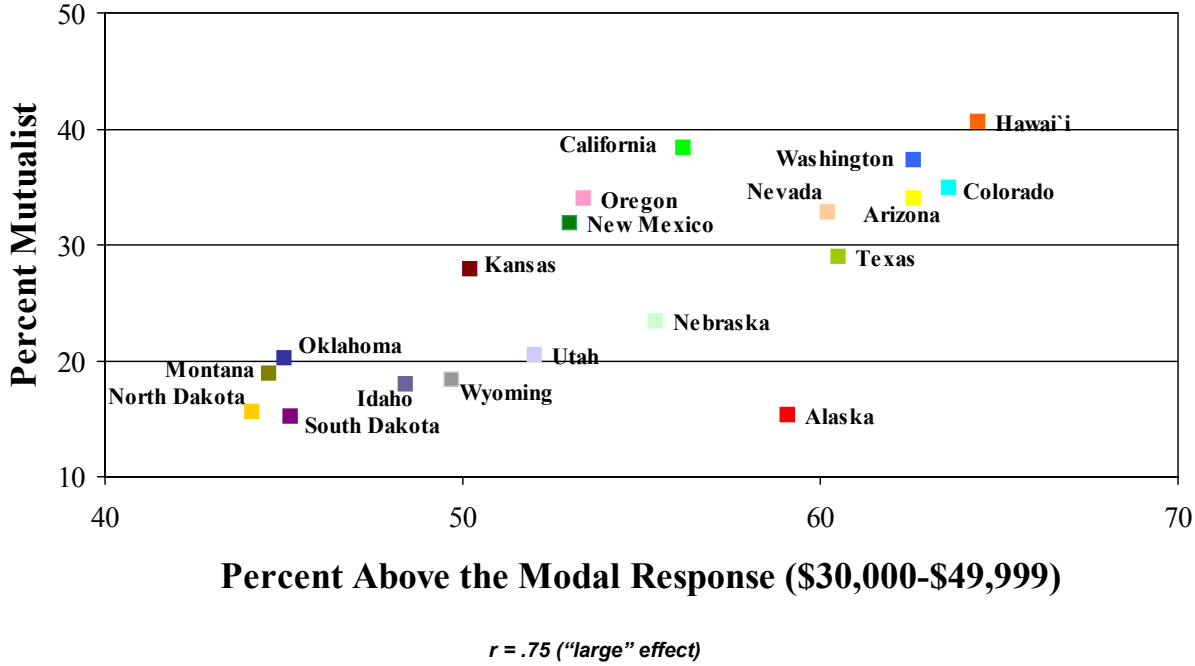
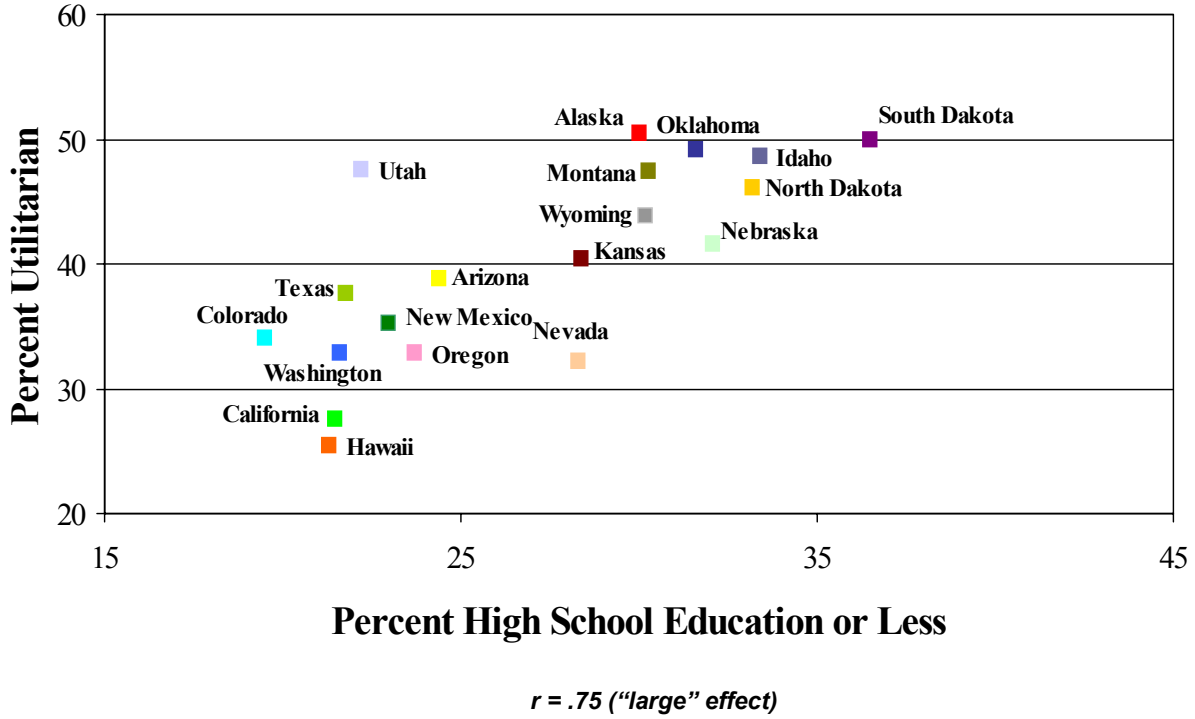
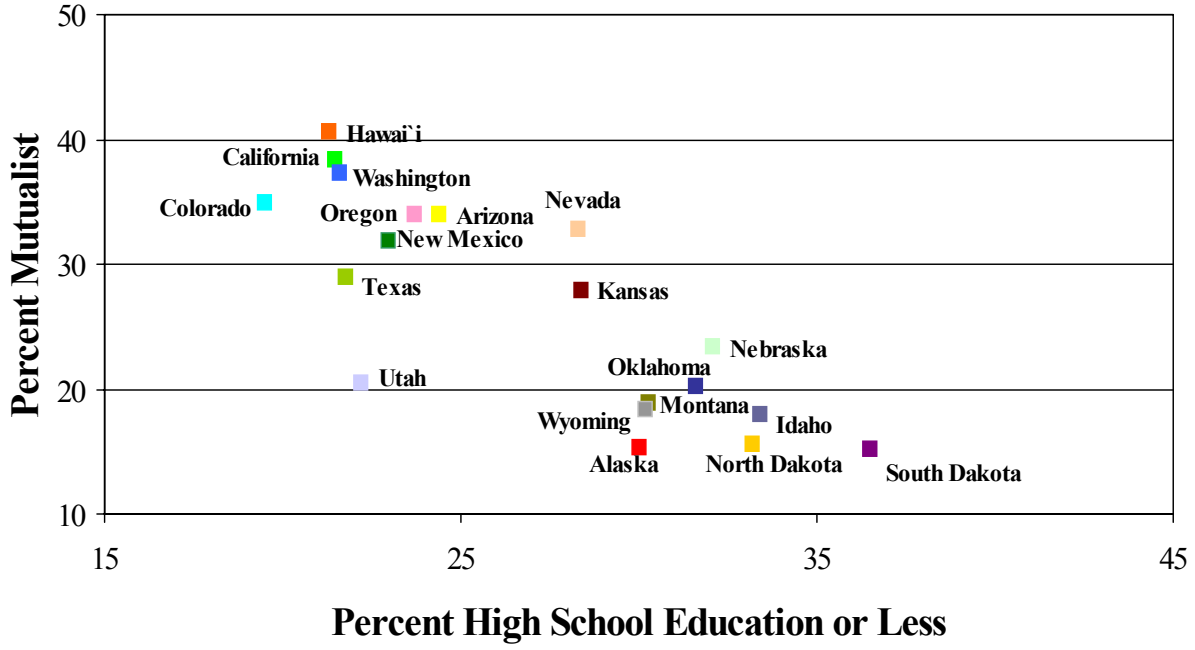


Figure III.D.3. Percent of Utilitarians by education across states.



r = .75 ("large" effect)

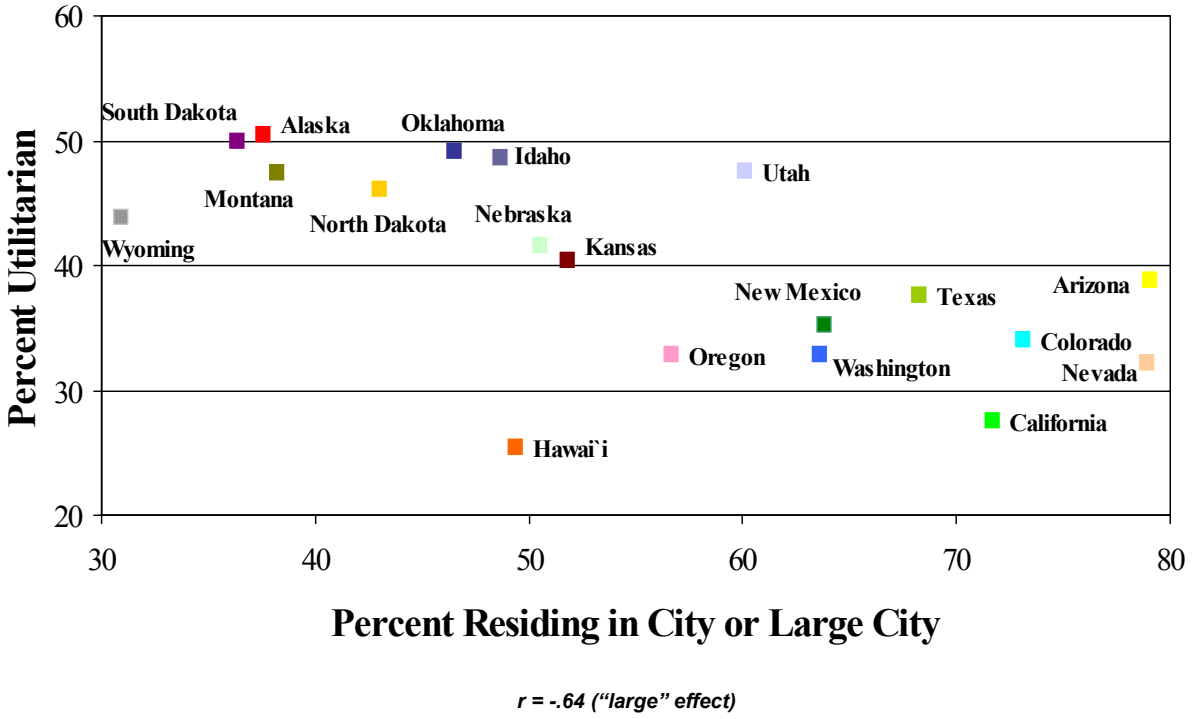
Figure III.D.4. Percent of Mutualists by education across states.



r = -.82 ("large" effect)

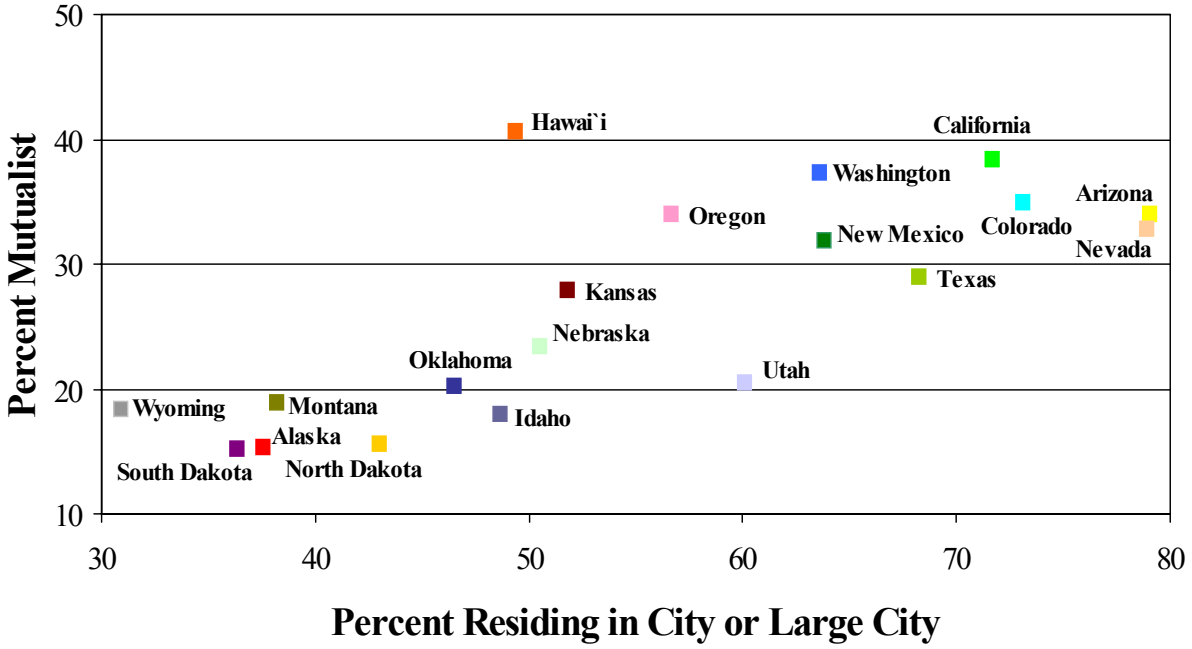
Similar findings exist for urbanization, defined through aggregation of response data as the percent of people currently residing in a medium to large-size city (i.e., with 50,000 or more people). As shown in Figures III.D.5 and III.D.6 and consistent with Hypothesis 4, there is an inverse relationship between urbanization and the proportion of Utilitarians in a state (r = -.64), indicating that states with higher percentages of people residing in urban areas have a lower percentage of Utilitarians relative to other states. Higher levels of urbanization are also associated with a greater proportion of Mutualists (r = .75).

Figure III.D.5. Percent of Utilitarians by urbanization across states.



r = -.64 ("large" effect)

Figure III.D.6. Percent of Mutualists by urbanization across states.



r = .75 ("large" effect)

E. RELATIONSHIP BETWEEN WILDLIFE VALUE ORIENTATION TYPES AND PATTERNS OF HUNTING PARTICIPATION

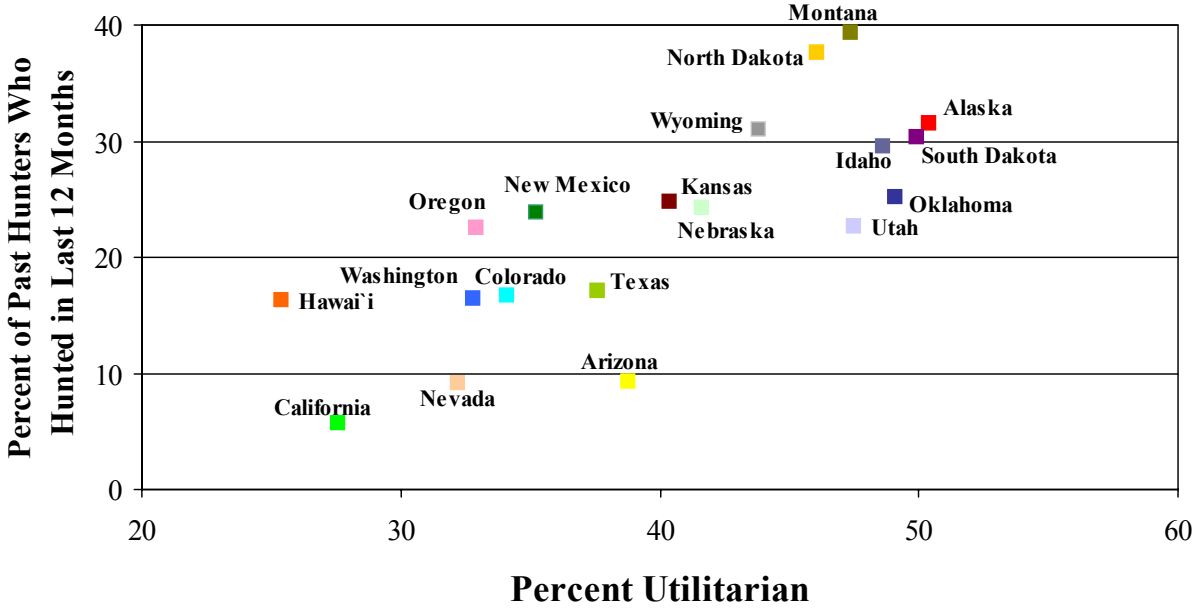
Wildlife value orientation shift has implications for trends in wildlife-related behaviors, including participation in wildlife-related recreation activities. Because hunting is purportedly rooted in a utilitarian wildlife value orientation (Fulton et al., 1996), movement away from emphasis on this orientation in our society should lead to a decline in hunting. Evidence of this decline in hunting exists in figures reported over time by national recreation surveys (e.g., see Cordell & Overdevest, 2001; U.S. Department of the Interior, Fish and Wildlife Service, 1997, 2002). Projections suggest that participation will continue to decline in the future, with an estimated decrease of at least 11% at the national level by the year 2050 (Bowker, English, & Cordell, 1999; Warwick, 2000).

To explore this further in the context of wildlife value orientation shift, we examined the relationship between the percent of Utilitarians in a state and the percent of hunters who reported past participation but also participated in the sport in the last year. The latter measure, combining responses to two items (i.e., past and current involvement), provides an indication of the extent to which past hunters have remained active.

As shown in Figure III.E.1 (also see Table A-17 in Appendix A) and consistent with our expectations stated in Hypothesis 5, we found a positive relationship between the prevalence of active hunters and the percent of Utilitarians in a state ($r = .76$). States with higher percentages of Utilitarians have a higher percent of people indicating active involvement in hunting. States with

lower percentages of this value orientation type, on the other hand, have fewer people actively involved in the sport. These findings are in line with the notion that a shift away from utilitarian orientations toward wildlife could potentially negatively impact participation in hunting.

Figure III.E.1. Percent of Utilitarians by percent of active hunters across states.



r = .76 ("large" effect)

F. RELATIONSHIP BETWEEN WILDLIFE VALUE ORIENTATION TYPES AND RESPONSES TO MANAGEMENT ISSUES

People with different wildlife value orientations respond to certain wildlife-related issues differently and may have different views about what forms of wildlife management are acceptable. To examine this further and thereby get a sense for how wildlife value orientation shift could affect public reactions to management issues, we looked at the relationship between wildlife value orientation types and responses to regional issues included on the survey (see Section IV for a full description of the issues).

While differences across wildlife value orientation types may be evident for some issues, they may not for others. As indicated in our final hypothesis (Hypothesis 6), we expected differences among types to be particularly evident in situations that deal with the treatment of wildlife.

Figures III.F.1 and III.F.2 display comparisons of the four wildlife value orientation types identified in this survey on their responses to a series of management actions across human-bear conflict situations. We chose to include information on this topic here as an illustration of how people with different value orientations might differ (or not differ) with regard to how acceptable they find certain management strategies. Responses by value orientation type to other issues on the survey not included here can be found in Tables A-18 through A-33 in Appendix A.

Figure III.F.1. Percent of wildlife value orientation type finding certain management actions acceptable when bears are getting into trash and pet food containers (bear situation 1).

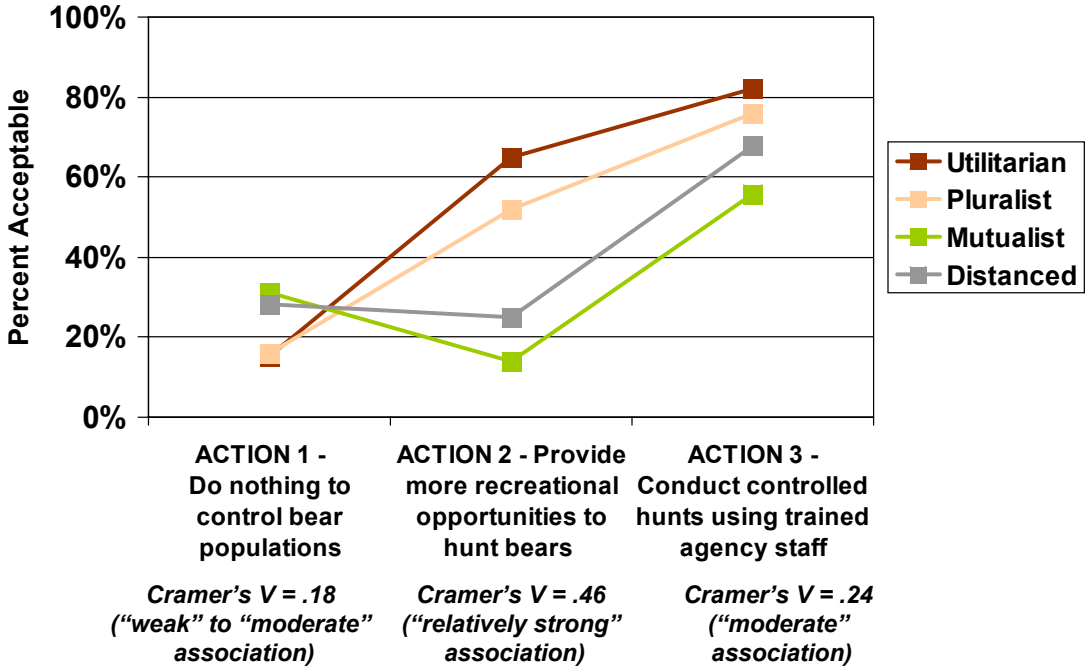
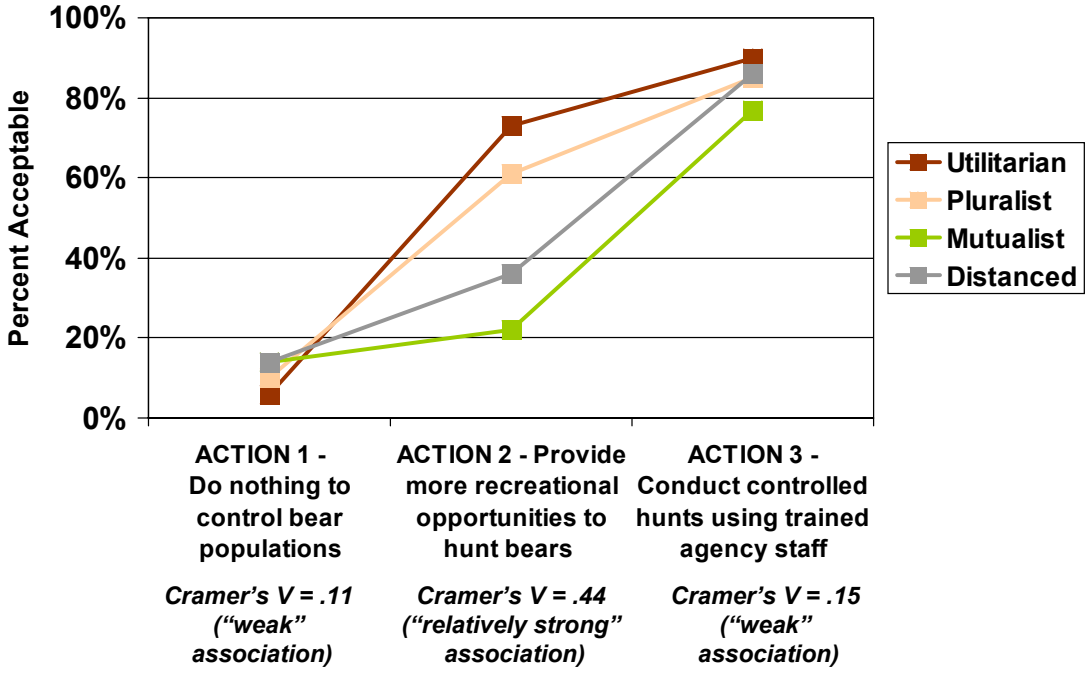


Figure III.F.2. Percent of wildlife value orientation type finding certain management actions acceptable when human deaths from bear attacks have occurred (bear situation 2).



As these figures illustrate, we see clear differences among publics as defined by their wildlife value orientations when dealing with situations that involve direct control or treatment of wildlife. One trend that is apparent from these figures is that Utilitarians and Pluralists are more likely than Mutualists and Distanced individuals to find lethal control acceptable regardless of the situation in which it is applied.

In some instances the types seem to converge with respect to how acceptable they find a given management action. For example, when the situation becomes more severe in terms of a threat to human safety, the four value orientation types are closer to agreement on the need for the agency to do something. There is also greater agreement among the groups on the acceptability of using trained agency staff to conduct controlled hunts under more severe circumstances. However, even in the latter situation, Mutualists are slightly less likely than Utilitarians to find this strategy acceptable.

G. CONCLUSION

Theory and empirical research suggest that increasing affluence and education (Inglehart, 1997), and increasing urbanization (Bell, 1973; Hays, 1987) drive value shift. As these conditions arise, there is a shift away from traditional Materialist values (focused on physical security and economic well-being) toward Post-Materialist values (focused on quality of life, self-expression, and self-esteem). Manfredo et al. (2003) contend that changes in these societal-level conditions have also initiated a gradual shift away from traditional wildlife value orientations that emphasize the use and management of wildlife for human benefit. The findings documented in this report provide support for these notions.

Using data collected in 19 states, we have revealed that the distribution of wildlife value orientations is tied to the distribution of Materialist/Post-Materialist values, suggesting that these two variables may be changing in line with one another in response to a broader set of cultural forces. Consistent with this notion, we found that the proportion of people with a traditional utilitarian orientation within a state is strongly and inversely related to certain factors believed to be at the root of cultural change, including value shift, in post-industrialized nations (i.e., income, urbanization, and education). Alternatively, the percent of people classified as Mutualists on the basis of their wildlife value orientations is positively related to these factors.

As our findings suggest, with sustained population growth and an extension of past trends – i.e., increased urbanization, affluence, and education – we will likely see a continued erosion of utilitarian thought and greater movement toward a mutualism orientation toward wildlife. Based on the potential implications we outline, these trends are likely to affect participation in wildlife-related recreation activities like hunting and to influence public perceptions of wildlife-related issues.

Cross-sectional findings reported here provide support for the contention that wildlife value orientations are changing as part of a broader societal context. Specifically, results establish an association between the distribution of wildlife value orientations and state-level variables believed to be indicative of cultural changes that have produced value shift. It will be important

to validate these cross-sectional findings over time through monitoring of wildlife value orientations and the key factors identified in this program of research.

REFERENCES

Bell, D. (1973). *The coming of post-industrial society*. New York: Basic Books.

Bowker, J. M., English, D. B. K., & Cordell, H. K. (1999). Projections of outdoor recreation participation to 2050. In H. K. Cordell (Ed.), *Outdoor recreation in American life: A national assessment of demand and supply trends* (pp. 323-350). Champaign, IL: Sagamore.

Buttel, F. H., & Humphrey, C. R. (2002). Sociological theory and the natural environment. In R. E. Dunlap, & W. Michaelson (Eds.), *Handbook of Environmental Sociology* (pp. 33-69). Westport, CT: Greenwood Press.

Cordell, H. K., & Overdevest, C. (2001). *Footprints on the land: An assessment of demographic trends and the future of natural lands in the United States*. Champaign, IL: Sagamore.

Fulton, D. C., Manfredo, M. J., & Lipscomb, J. (1996). Wildlife value orientations: A conceptual and measurement approach. *Human Dimensions of Wildlife, 1*(2), 24-47.

Harris, M. (1999). *Theories of culture in postmodern times*. Walnut Creek, CA: Altamira Press.

Hays, S. (1987). *Beauty, health, and permanence: Environmental politics in the United States, 1955-1985*. New York, NY: Cambridge University Press.

Heberlein, T. A. (1991). Changing attitudes and funding for wildlife - Preserving the sport hunter. *Wildlife Society Bulletin, 19*(4), 528-534.

Inglehart, R. (1990). *Culture shift in advanced industrial societies*. Princeton, NJ: Princeton University Press.

Inglehart, R. (1997). *Modernization and postmodernization*. Princeton, NJ: Princeton University Press.

Inglehart, R. and Baker, W. E. (2000). Modernization, cultural change, and the persistence of traditional values. *American Sociological Review, 65*, 19-51.

Manfredo, M. J., Teel, T. L., & Bright, A. D. (2003). Why are public values toward wildlife changing? *Human Dimensions of Wildlife, 8*(4), 285-304.

Mertig, A. G., Dunlap, R. E., & Morrison, D. E. (2002). The environmental movement in the United States. In R. E. Dunlap, & W. Michaelson (Eds.), *Handbook of Environmental Sociology* (pp. 448-481). Westport, CT: Greenwood Press.

Minnis, D. L. (1998). Wildlife policy-making by the electorate: An overview of citizen-sponsored ballot measures on hunting and trapping. *Wildlife Society Bulletin 26*(1), 75-83.

Peterson, M., & Manfredo, M. J. (1993). Social science and the evolving conservation philosophy. In S. K. Majumder, E. W. Miller, D. E. Baker, E. K. Brown, J. R. Pratt, & R. T. Schmalz (Eds.), *Conservation and resource management* (pp. 292-304). Pittsburgh: Pennsylvania Academy of Sciences.

Smith, S., & Young, P. D. (1998). *Cultural anthropology: Understanding a world in transition*. Boston: Allyn and Bacon.

Teel, T. L. (2004). *A broader context for understanding the basis for and application of wildlife value orientations.* Dissertation. Fort Collins, Colorado: Colorado State University.

U.S. Department of the Interior, Fish and Wildlife Service. (1997). *1996 national survey of fishing, hunting, and wildlife-associated recreation*. Washington DC: U.S. Government Printing Office.

U.S. Department of the Interior, Fish and Wildlife Service. (2002). *2001 national survey of fishing, hunting, and wildlife-associated recreation*. Washington DC: U.S. Government Printing Office.

Warwick, R. B. (2000). Recreation participation trends: Generational patterns and change. *The 5th Outdoor Recreation and Tourism Trends Symposium: Shaping the Future.* Lansing, MI: Department of Park, Recreation, and Tourism Resources, Michigan State University.

SECTION IV. PUBLIC RESPONSES TO REGIONAL WILDLIFE ISSUES

[RESULTS FOR STUDY OBJECTIVE 4]

This section examines the public's responses to questions regarding key "regional" wildlife management issues. The three regional issues included: 1) philosophy for serving and involving the public in wildlife management, 2) population level techniques to address growing human-wildlife conflict, and 3) managing for biodiversity and species of concern. The focus of this section is on issues 1 and 2. See Section V for more reporting on issue 3.

Results for each item are displayed using maps, allowing for easy comparison between states. For information on how to read the maps, see Appendix B. In cases where the map percentages are based on collapsing response scales (e.g., percent in agreement with a statement includes those who selected "slightly agree," "moderately agree," and "strongly agree"), the breakdown of responses is available in tables in Appendix A (Tables A-34 to A-90). Responses to regional issues by wildlife value orientation type are displayed in Section III and Tables A-18 to A-33. Differences in responses to regional issues by participation in wildlife recreation are summarized in Section V.D and Tables A-91 to A-105.

A. PHILOSOPHY FOR SERVING AND INVOLVING THE PUBLIC IN WILDLIFE MANAGEMENT

Questions presented in this section examine the public's perceptions of the agency's philosophy for serving and involving the public in wildlife management. Three components of the topic are addressed:

1. funding and programming approach;
2. public involvement philosophy; and
3. trust in government.

The survey items and results for each of these components are presented in order below.

<u>Funding and Programming Approach</u>

This regional issue involves an examination of philosophical orientations toward paying for wildlife management. Specifically, it explores approaches for who pays for wildlife management as compared to who "benefits" through programs provided by the agency.

Respondents were presented with four hypothetical approaches. The four approaches included all combinations of two options for funding and two options for recipients of programming benefits. The options for funding were "almost entirely by hunting and fishing license dollars" or "substantially funded by both hunting and fishing license dollars and public taxes." The options for recipients of programming benefits were hunters/anglers primarily or all members of the public. Following the approaches, respondents were asked to select 1) their perceived current approach in their state and 2) their desired approach for their state.

State fish and wildlife agencies hear from many different groups of people about their interests, making decisions and priorities difficult. Below is a series of hypothetical approaches that describe how priorities *could* be directed. *Please read about each approach. Then tell us how you think things are now and how they should be in your state based on these approaches by answering the 2 questions that follow.*

APPROACH 1	• State agencies develop programs that meet the needs primarily of those who hunt and/or fish. • Fish and wildlife management is **almost entirely funded by hunting and fishing license dollars**.
APPROACH 2	• State agencies develop programs that meet the needs primarily of those who hunt and/or fish. • Fish and wildlife management is **substantially funded by both hunting and fishing license dollars *and* public taxes**.
APPROACH 3	• State agencies develop programs that meet the needs of all members of the public regardless of their level of interest in wildlife. • Fish and wildlife management is **almost entirely funded by hunting and fishing license dollars**.
APPROACH 4	• State agencies develop programs that meet the needs of all members of the public regardless of their level of interest in wildlife. • Fish and wildlife management is **substantially funded by both hunting and fishing license dollars *and* public taxes**.

1. Of the above approaches, which approach do you think best resembles how things are now in your state? *Check only one (☑).*

❒ **Approach 1** ❒ **Approach 2** ❒ **Approach 3** ❒ **Approach 4**

2. Which approach best represents your opinion of how things should be in your state? *Check only one (☑).*

❒ **Approach 1** ❒ **Approach 2** ❒ **Approach 3** ❒ **Approach 4**

Figure IV.A.1 shows a horizontal bar chart for perceived current approach responses from each state. The bars represent the percent of the public selecting each approach. Thus, the four bars in each state sum to 100%. See Tables A-34 through A-52 for the exact percentages for each approach for each state. The "total" column in each table shows the percent of all respondents who selected each perceived approach.

Perceived current approach results. When considering "how things are now," the modal response for all states (except Oklahoma) was the approach that *meets the needs of all members of the public and is substantially funded by hunting and fishing licenses and public taxes* (Approach 4). California, Hawai`i, and Oregon had the highest percent selecting this approach, which was at least twice the number of respondents selecting the next most selected response in those states. The second most selected response in most states (except Idaho, Montana, and Wyoming) was the approach that *meets the needs of hunters/anglers and is substantially funded by hunting and fishing licenses and public taxes* (Approach 2). It should be noted that in Idaho, Montana, and Wyoming the distribution of responses across the approaches was nearly equivalent.

Figure IV.A.2 shows a horizontal bar chart for desired approach responses from each state. The bars represent the percent of the public selecting each approach. Thus, the four bars in each state sum to 100%. See Tables A-34 through A-52 for the exact percentages for each approach for each state. The "total" row in these tables shows the percent of respondents who selected each desired approach.

Desired approach results. When considering "how things should be," the modal response for all states was the approach that *meets the needs of all members of the public and is substantially funded by hunting and fishing licenses and public taxes* (Approach 4). Half or more of the

respondents in every state selected this approach. The second most selected response in all states was the approach that *meets the needs of all members of the public and is funded primarily by hunting and fishing license*s (Approach 3).

Comparison of results. A comparison of Figures IV.A.1 and IV.A.2 highlights that there was much greater consensus within each state and among the states on the desired approach than on the perceived approach. As shown in Figure IV.A.3, the perceived approach differed from the desired approach for over 45% of the respondents in each state.

See Tables A-34 through A-52 in the Appendix for a cross-tabulation of the percent of respondents who selected each approach as the perceived current approach as compared to their selection for their desired approach. The cells for the same approach for perceived current approach and desired approach (along the diagonal) sum to the percent of respondents who showed consistency with their perceived and desired funding approaches. All other cells (other than the totals) sum to the percent of disparity in a state as displayed in Figure IV.A.3.

Figure IV.A.1. Percent of respondents indicating each approach as that which "best resembles *how things are now* in your state."

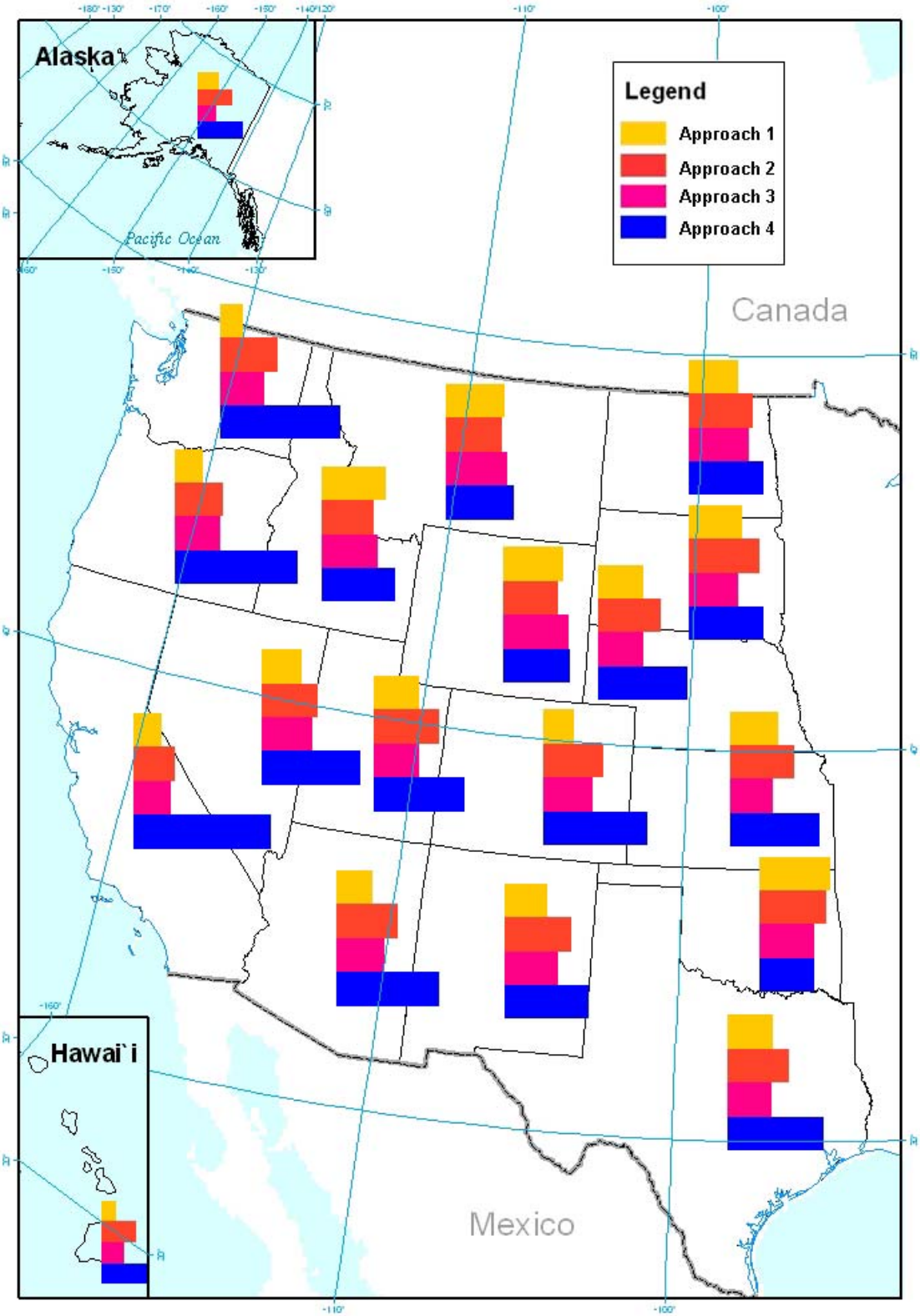


Figure IV.A.2. Percent of respondents indicating each approach as that which "best represents your opinion of *how things should be* in your state."

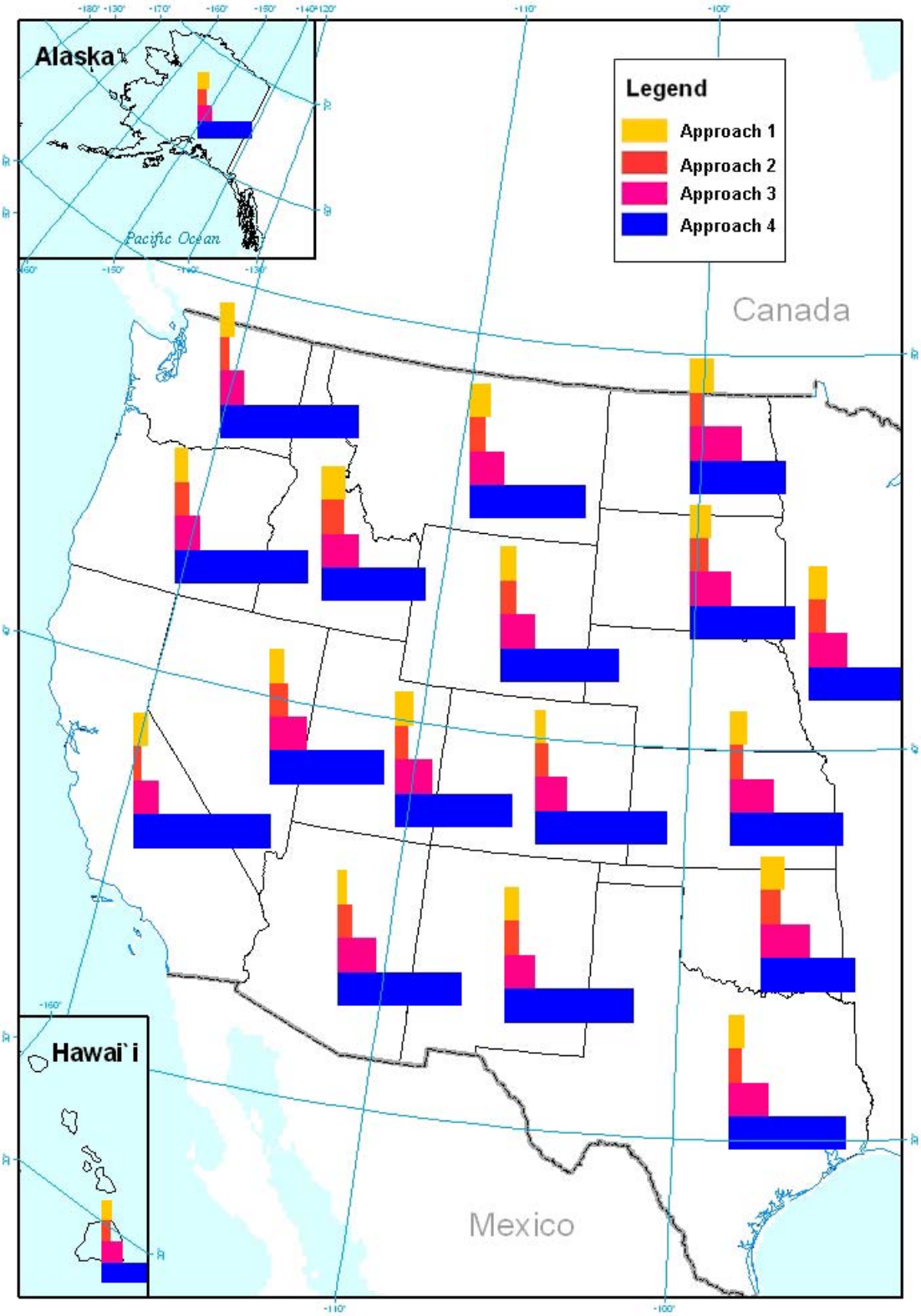
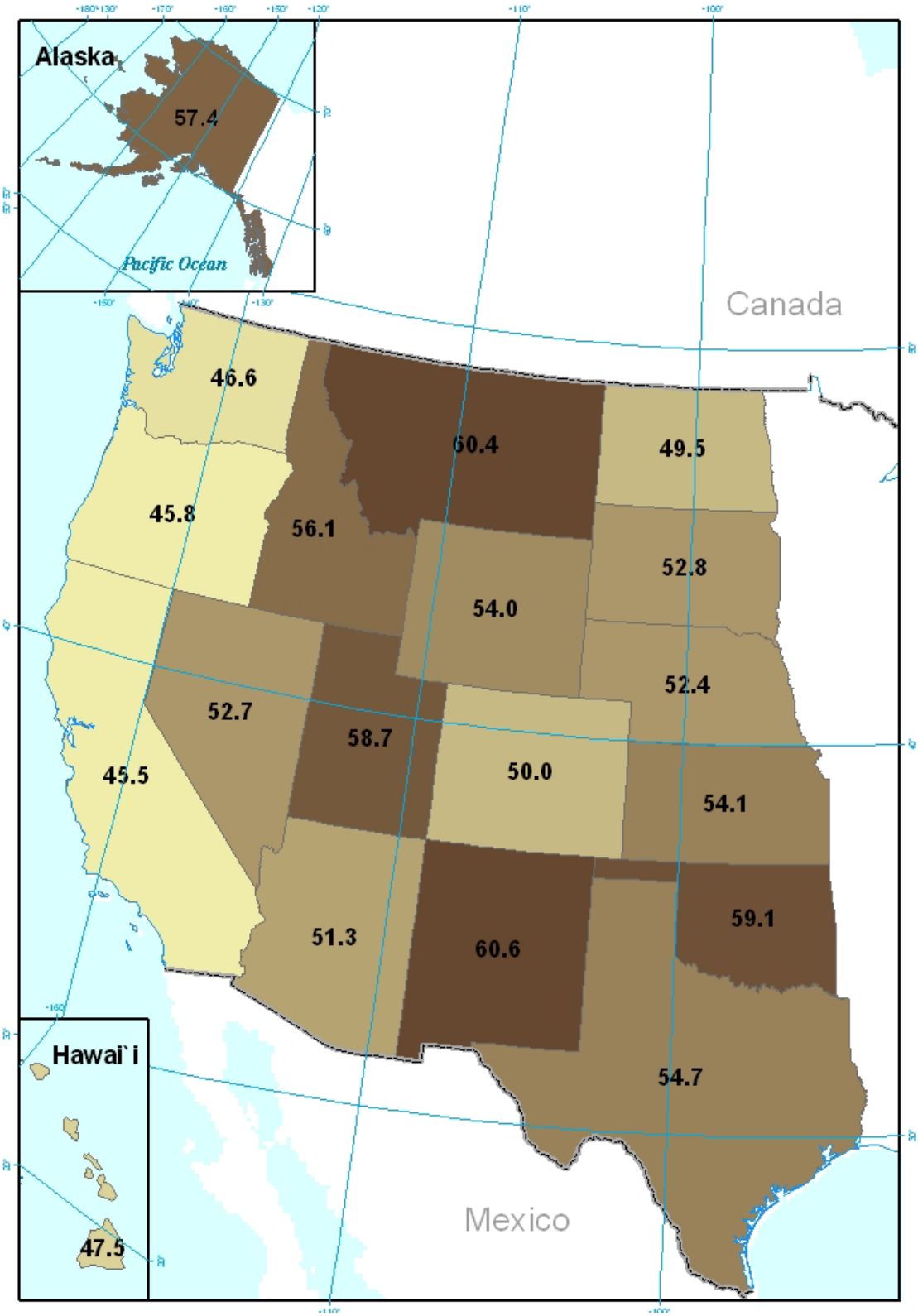


Figure IV.A.3. Percent of respondents selecting different approaches for *how things are now* and for *how things should be* in the state.



Public Involvement Philosophy

This regional issue focuses on the public's involvement in fish and wildlife decision-making at the state level. It covers the extent to which people feel their opinions, interests, and input are heard and adequately considered in decisions. It also involves the determination of whether or not people have an interest in providing input and if they feel that input will make a difference. Respondents were asked to indicate their level of agreement with each of the six statements listed below.

We would like to know how you feel about the extent to which your state fish and wildlife agency listens to and considers your opinions in fish and wildlife decision-making. Please indicate how strongly you disagree or agree with each of the following statements. ***Circle one number for each statement.***

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
1. I feel that my opinions are heard by fish and wildlife decision-makers in my state.	1	2	3	4	5	6	7
2. I feel that my interests are adequately taken into account by fish and wildlife decision-makers in my state.	1	2	3	4	5	6	7
3. I feel that if I provide input, it will make a difference in fish and wildlife decisions in my state.	1	2	3	4	5	6	7
4. I feel that my state fish and wildlife agency makes a good effort to obtain input from the public as a whole.	1	2	3	4	5	6	7
5. I don't have an interest in providing input to fish and wildlife decisions in my state.	1	2	3	4	5	6	7
6. I trust my state fish and wildlife agency to make good decisions without my input.	1	2	3	4	5	6	7

Figures IV.A.4 through IV.A.9 display the percent of respondents who agreed with each statement (i.e., the percent includes those who selected "slightly agree," "moderately agree," or "strongly agree"). It is important to note that "neither" had a high percent of response on some items. For example, for statement 1, "neither" was selected by a low of 25.1% in Alaska to a high of 46.9% in Kansas. See Tables A-53 through A-58 in the Appendix for the complete display of responses for each statement.

Summary of results. Less than 45% of respondents felt that their opinions are heard and their interests are taken into account by fish and wildlife decision-makers. More respondents in each state did feel their interests are taken into account than their opinions are heard. Less than 50% felt their input makes a difference. There was considerable variability among states on whether the agency makes a good effort to obtain input from the public. Approximately 20-30% had no interest in providing input to fish and wildlife decisions. There was high variability among states on whether respondents trust the agency to make good decisions without their input.

Figure IV.A.4. Percent of respondents agreeing with the statement "I feel that *my opinions are heard* by fish and wildlife decision-makers in my state."

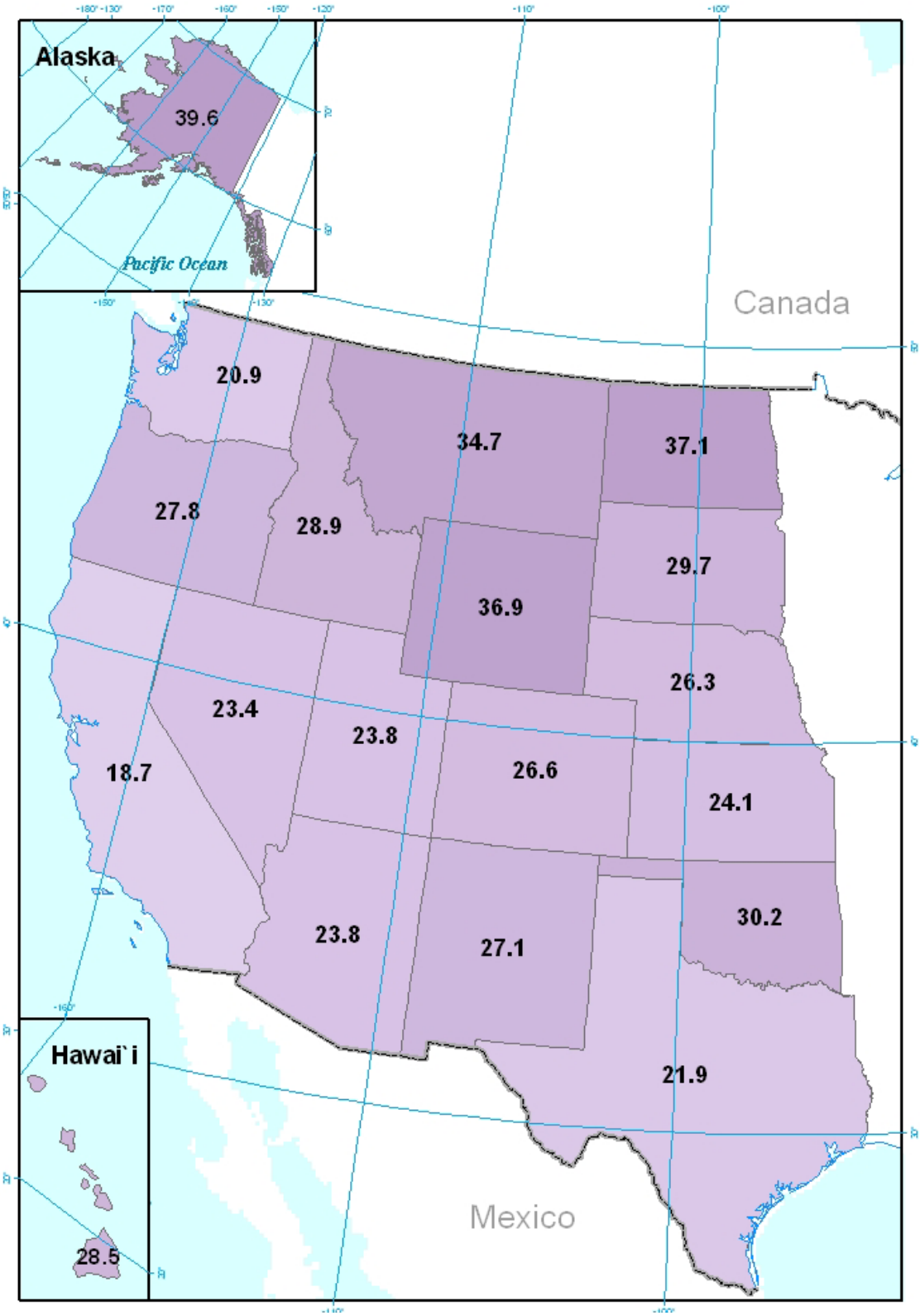


Figure IV.A.5. Percent of respondents agreeing with the statement "I feel that *my interests are adequately taken into account* by fish and wildlife decision-makers in my state."

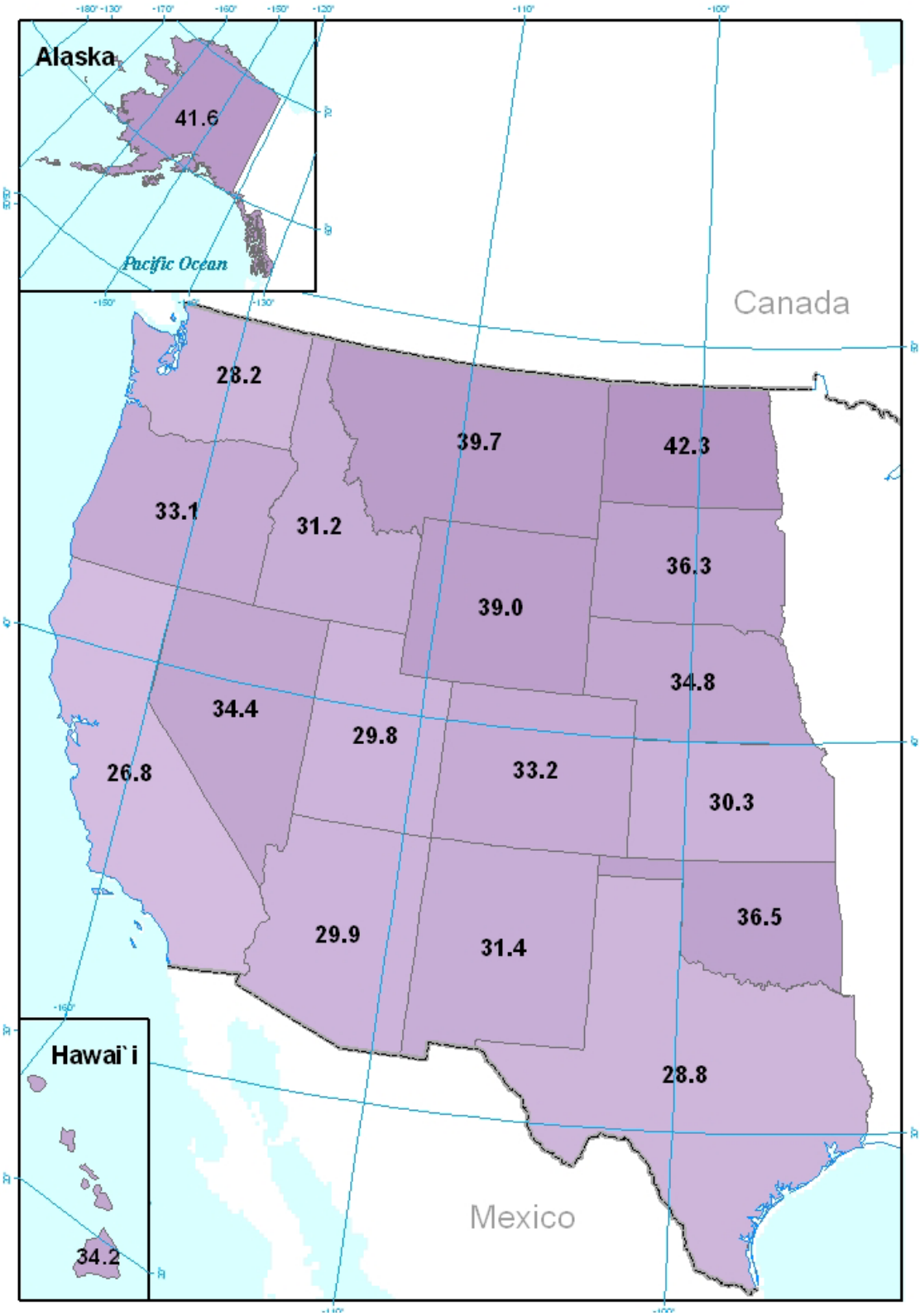


Figure IV.A.6. Percent of respondents agreeing with the statement "I feel that *if I provide input, it will make a difference* in fish and wildlife decisions in my state."

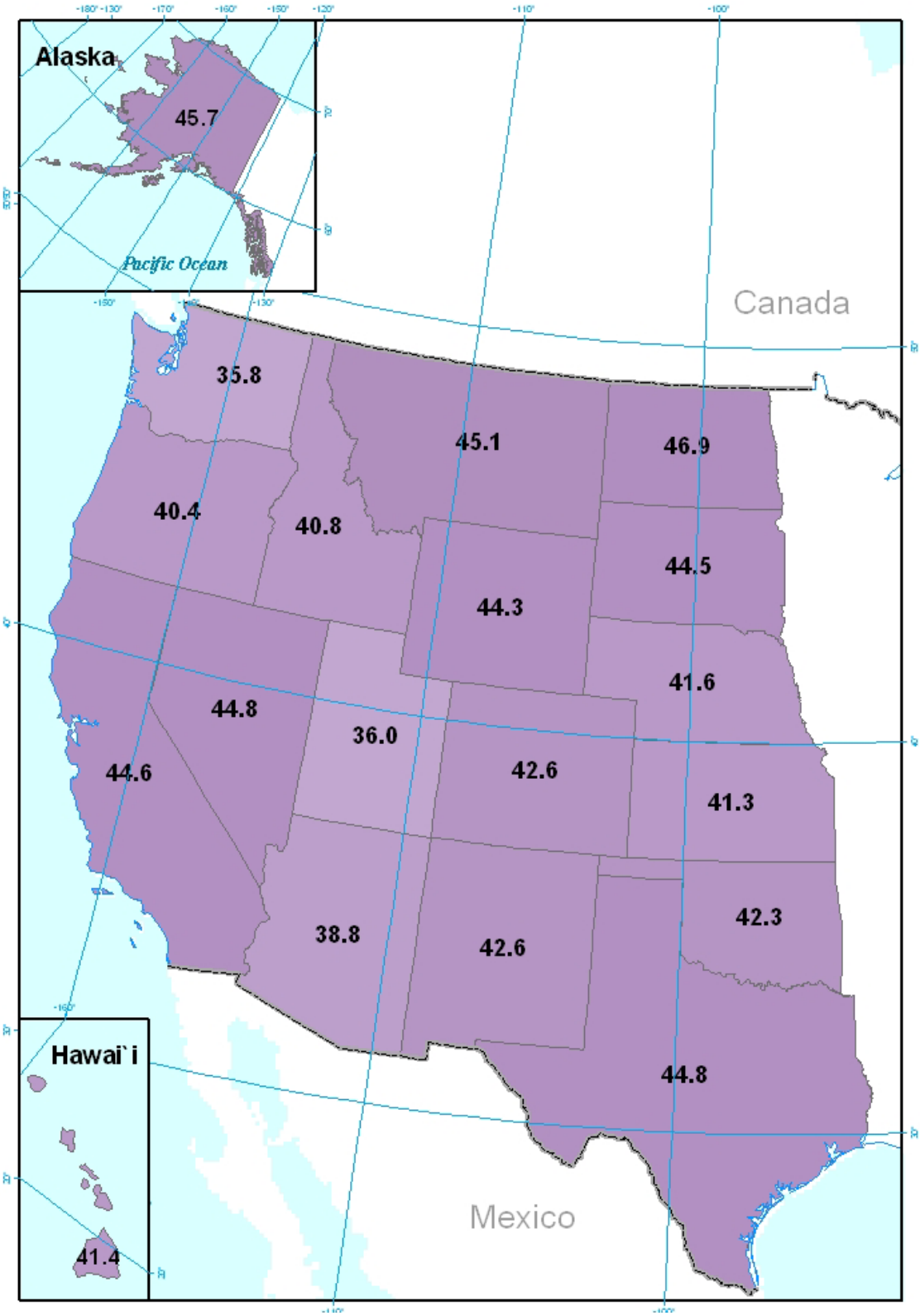


Figure IV.A.7. Percent of respondents agreeing with the statement "I feel that my state fish and wildlife agency makes a good effort to obtain *input from the public as a whole*."

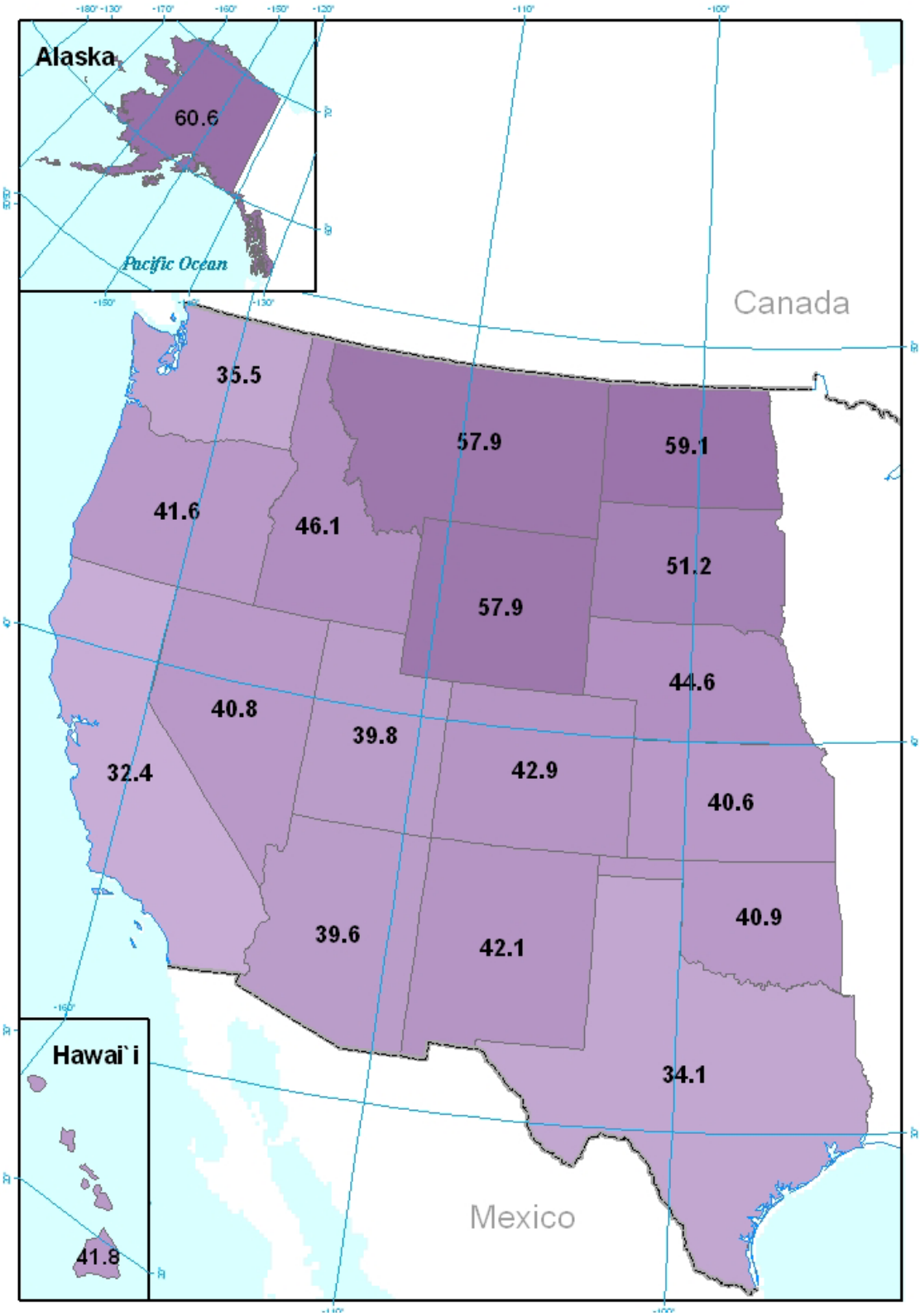


Figure IV.A.8. Percent of respondents agreeing with the statement "*I don't have an interest* in providing input to fish and wildlife decisions in my state."

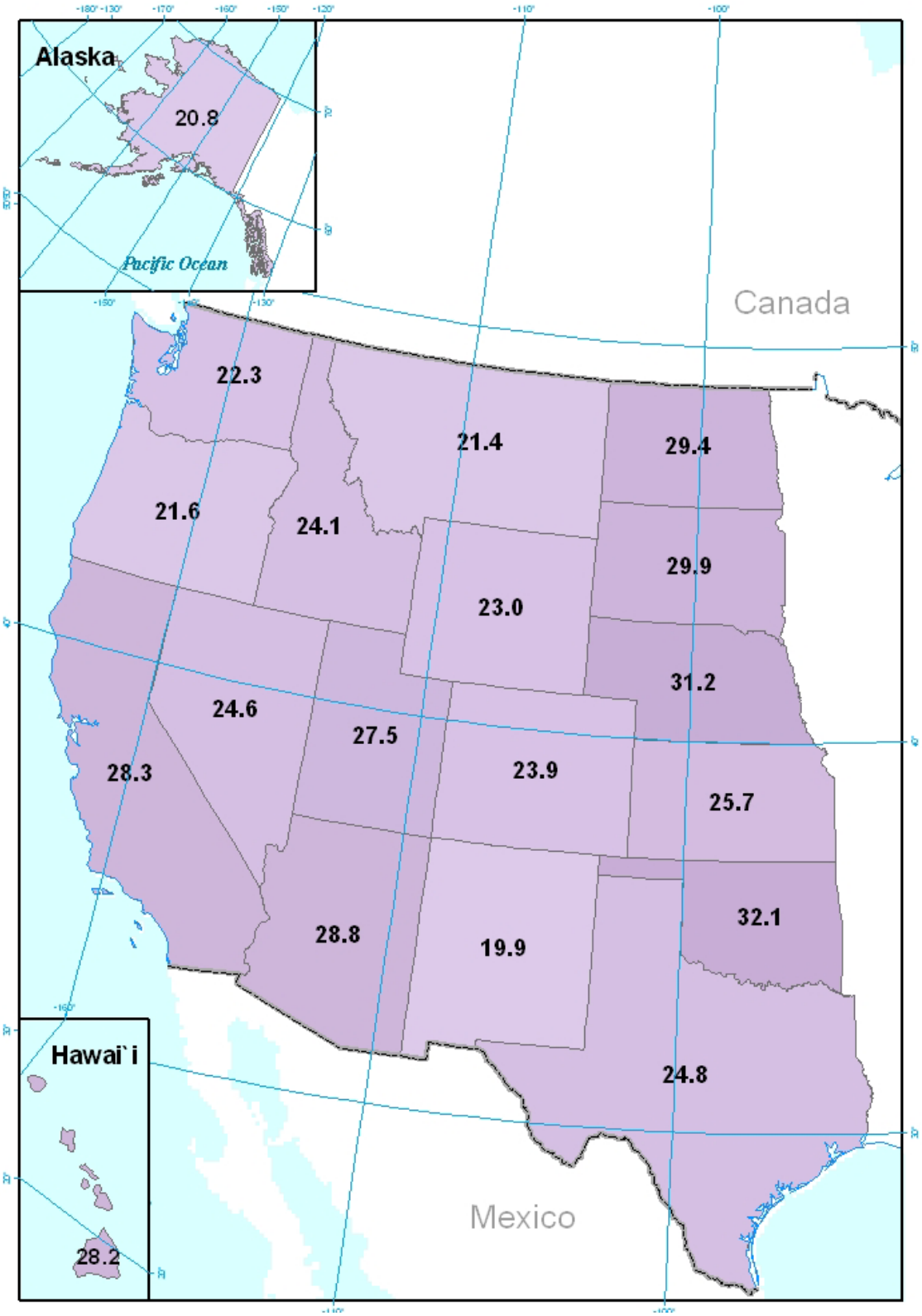
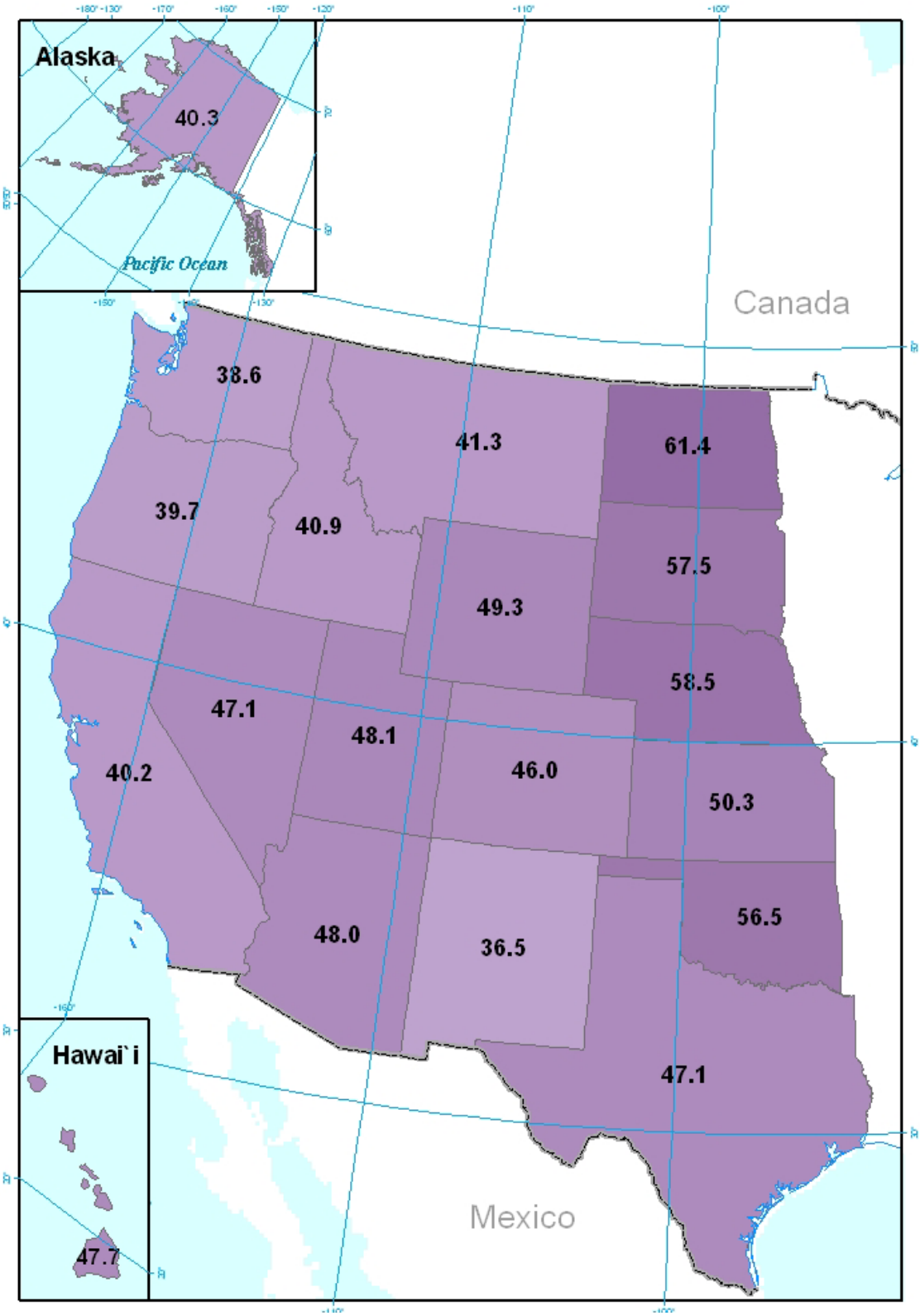


Figure IV.A.9. Percent of respondents agreeing with the statement "I trust my state fish and wildlife agency to *make good decisions without my input*."



Trust in Government

This regional issue explores the public's level of trust relative to three forms of government: federal, state, and the state fish and wildlife agency. It complements the public involvement philosophy statement "I trust my state fish and wildlife agency to *make good decisions without my input*" by broadly asking about trust in the agency, and it puts the responses in the context of other forms of government. Respondents were asked to respond to the statements listed below.

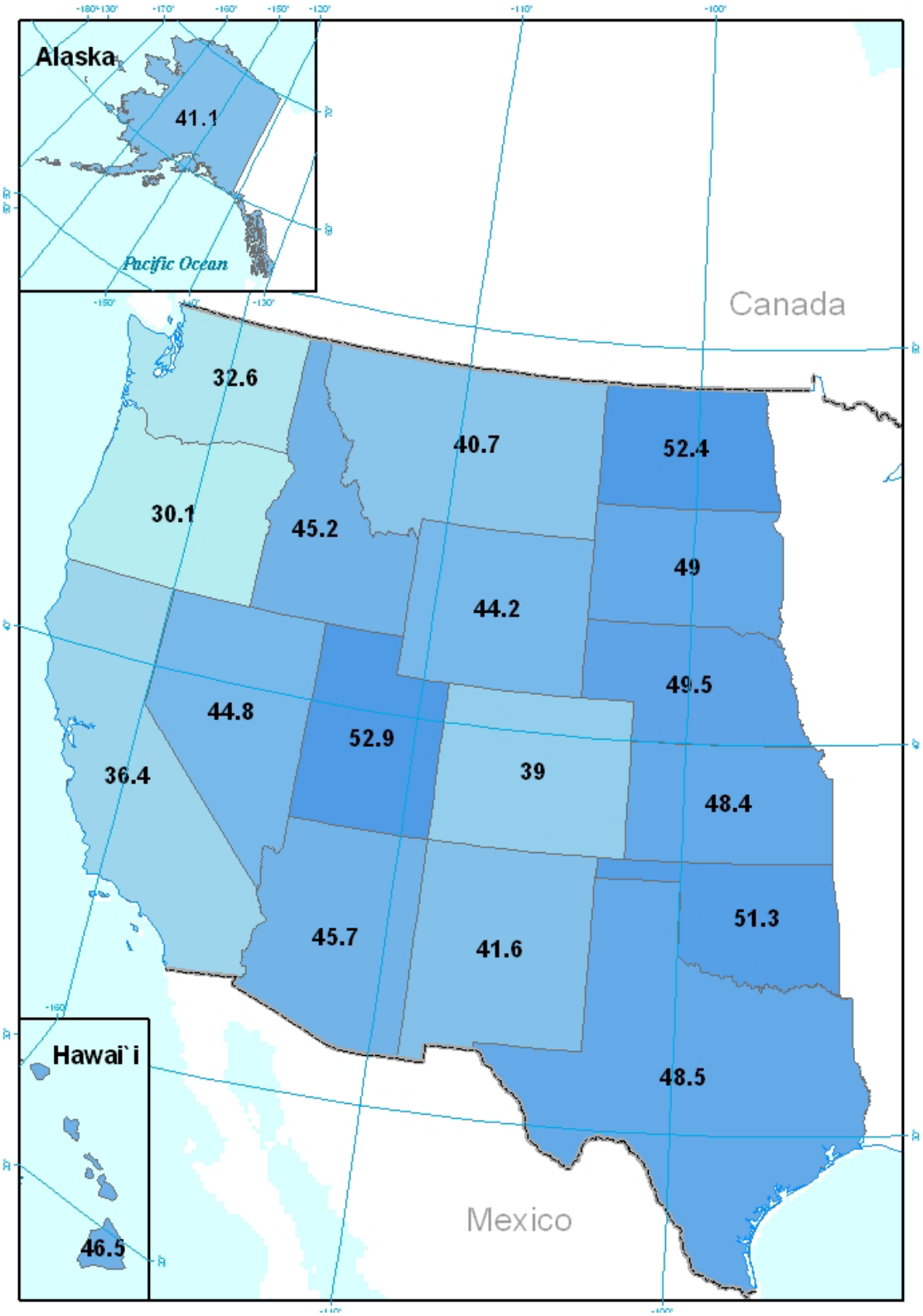
Please respond to the following questions about the extent to which you trust certain forms of government. ***Circle one number for each statement.***

Overall, to what extent do you trust…	Almost Never	Only Some of the Time	Most of the Time	Almost Always
1. …your federal government to do what is right for your country?	1	2	3	4
2. …your state government to do what is right for your state?	1	2	3	4
3. …your state fish and wildlife agency to do what is right for fish and wildlife management in your state?	1	2	3	4

Figures IV.A.10 through IV.A.12 display the percent of respondents who trust the given government body to do what is right. The percent includes those who selected "most of the time" or "almost always." See Tables A-59 through A-61 in the Appendix for the complete display of responses for each statement.

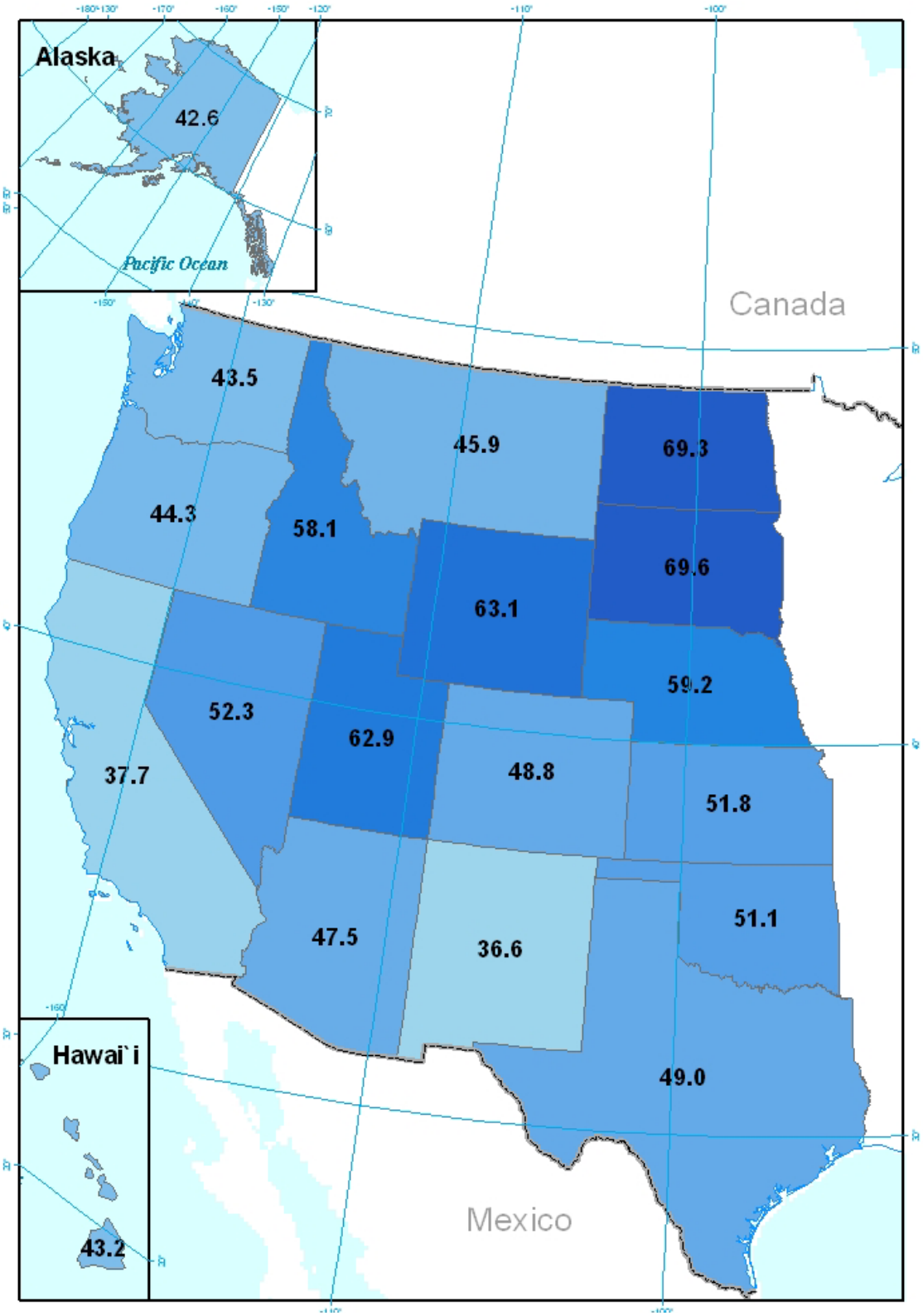
Summary of results. With about half or less of the respondents in each state expressing trust, the federal government was the least trusted form of government in most states (except Oklahoma, Hawai`i, and New Mexico, which trusted the state government the least). With 50-80% of the respondents expressing trust, the state fish and wildlife agency was the most trusted form of government in all of the states.

Figure IV.A.10. Percent of respondents expressing trust[1] in their *federal government*.



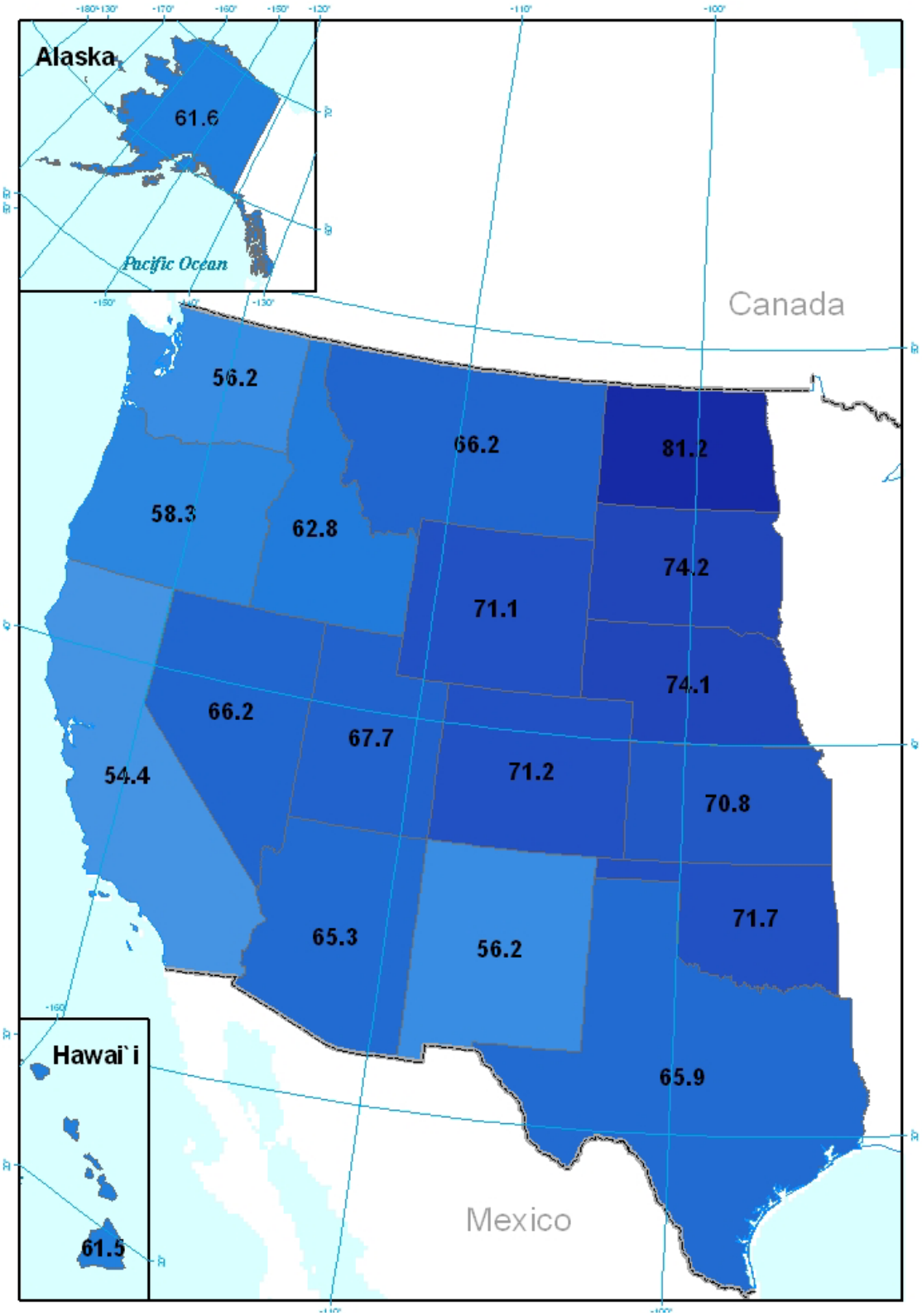
[1]Defined as "most of the time" and "almost always."

Figure IV.A.11. Percent of respondents expressing trust[1] in their *state government*.



[1]Defined as "most of the time" and "almost always."

Figure IV.A.12. Percent of respondents expressing trust[1] in their *state fish and wildlife agency*.



[1]Defined as "most of the time" and "almost always."

B. POPULATION-LEVEL TECHNIQUES TO ADDRESS GROWING HUMAN-WILDLIFE CONFLICT

This regional issue examines the public's perceptions of population-level techniques to address human-wildlife conflict. The issue was organized into two conflict situations for black bears and two conflict situations for deer. The severity increased from nuisance (first situation) to safety threat (second situation) for both species. Following the description of the situations, respondents were asked to select whether specific population-level management actions were acceptable in each of the two situations. The actions for the black bear and the deer were the same with the addition of contraception management actions for deer. The survey items are shown below.

Fish and wildlife agencies want to know how the public thinks the agencies should respond to human-wildlife conflict situations. Below are two IMAGINARY situations involving black bears. We would like to know how you feel about certain management actions that could be directed at bear populations to address these situations. *Even though it may seem unlikely that these things could occur where you live, we are still interested in your opinions.*

(PLEASE TELL US HOW YOU FEEL ABOUT THE ACTIONS LISTED BELOW FOR EACH SITUATION)

ACTIONS:	SITUATION 1 Bears are wandering into areas where humans live in search of food. Bears are getting into trash and pet food containers.		SITUATION 2 Bears are wandering into areas where humans live in search of food. Human deaths from bear attacks have occurred.	
Is it unacceptable or acceptable to….	**Unacceptable**	**Acceptable**	**Unacceptable**	**Acceptable**
1. ...do nothing to control bear populations?	❒	❒	❒	❒
2. ... provide more recreational opportunities to hunt bears?	❒	❒	❒	❒
3. ... conduct controlled hunts using trained agency staff?	❒	❒	❒	❒

Below are two IMAGINARY situations involving deer. We would like to know how you feel about certain management actions that could be directed at deer populations to address these situations. *Even though it may seem unlikely that these things could occur where you live, we are still interested in your opinions.*

(PLEASE TELL US HOW YOU FEEL ABOUT THE ACTIONS LISTED BELOW FOR EACH SITUATION)

ACTIONS:	SITUATION 1 Deer numbers are increasing. There are complaints about deer entering people's yards and eating shrubs and garden plants.		SITUATION 2 Deer numbers are increasing. Authorities are concerned because deer are carrying a disease that is transmissible to some domestic animals and livestock.	
Is it unacceptable or acceptable to….	**Unacceptable**	**Acceptable**	**Unacceptable**	**Acceptable**
1. ...do nothing to control deer populations?	❒	❒	❒	❒
2. ... provide more recreational opportunities to hunt deer?	❒	❒	❒	❒
3. ... conduct controlled hunts using trained agency staff?	❒	❒	❒	❒
4. ... distribute pellets containing contraceptives, causing deer to be unable to produce offspring permanently?	❒	❒	❒	❒
5. ... distribute pellets containing contraceptives, causing deer to be unable to produce offspring for only a few breeding seasons?	❒	❒	❒	❒

Figures IV.B.1 through IV.B.6 display the public's perceptions of the acceptability of each management action for the black bear situations. The responses to each management action are displayed in order with situation 1 followed by situation 2. The color scheme for these maps ranges from red to yellow to green, including various shades of the colors. Dark red designates that an action had the lowest percent of acceptability, or it was highly unacceptable to the public in the state. Dark green designates that an action had the highest percent of acceptability, or it was highly acceptable to the public in the state.

Summary of results. The majority of the respondents in all states did not find it acceptable to do nothing to control bear populations when bears are getting into trash and pet food containers. The respondents in all states found it even less acceptable to do nothing to control bear populations when human deaths have occurred from bear attacks. States varied greatly on the acceptability of providing more recreational opportunities to hunt bears in both situations; yet, in all states it was more acceptable than doing nothing. The majority of respondents in all states found it acceptable to conduct controlled hunts using trained agency staff in both situations. In all states controlled hunts were the most acceptable action in both situations (except Montana when bears are getting into trash and pet food containers).

Figure IV.B.1. Percent of respondents finding the action "do nothing to control bear populations" acceptable when bears are getting into trash and pet food containers.

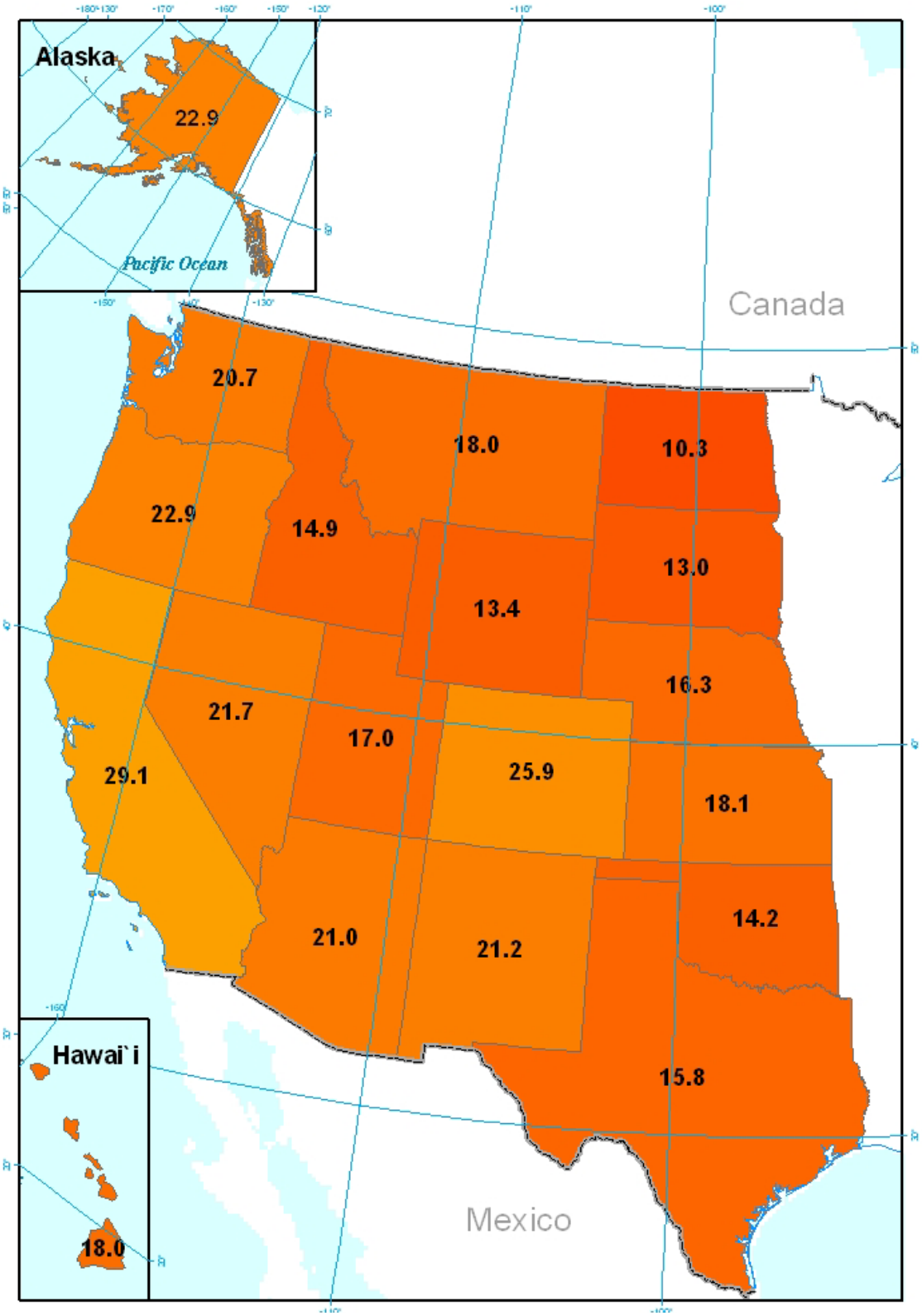


Figure IV.B.2. Percent of respondents finding the action "do nothing to control bear populations" acceptable for bear when human deaths have occurred from bear attacks.

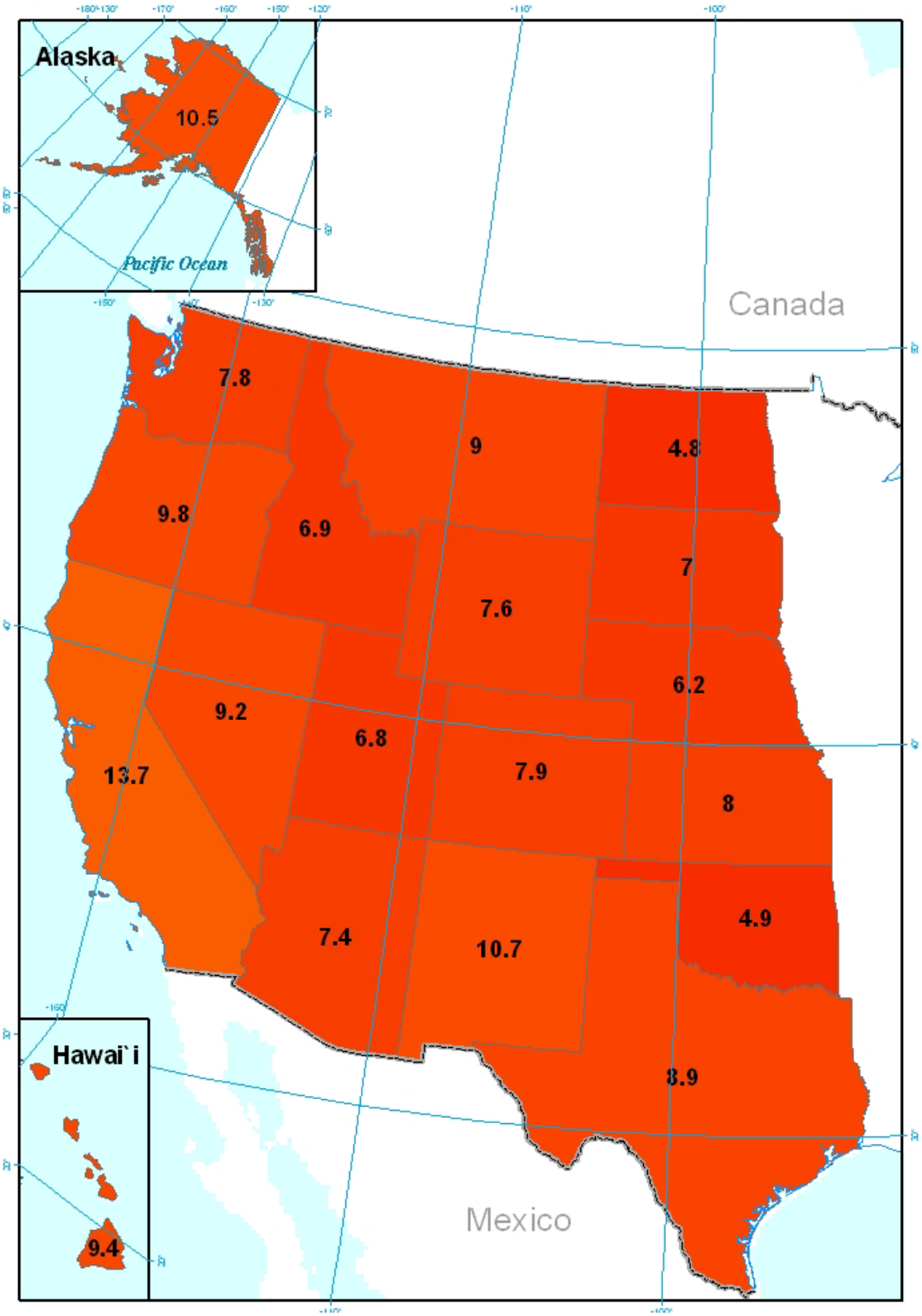


Figure IV.B.3. Percent of respondents finding the action "provide more recreational opportunities to hunt bears" acceptable when bears are getting into trash and pet food containers.

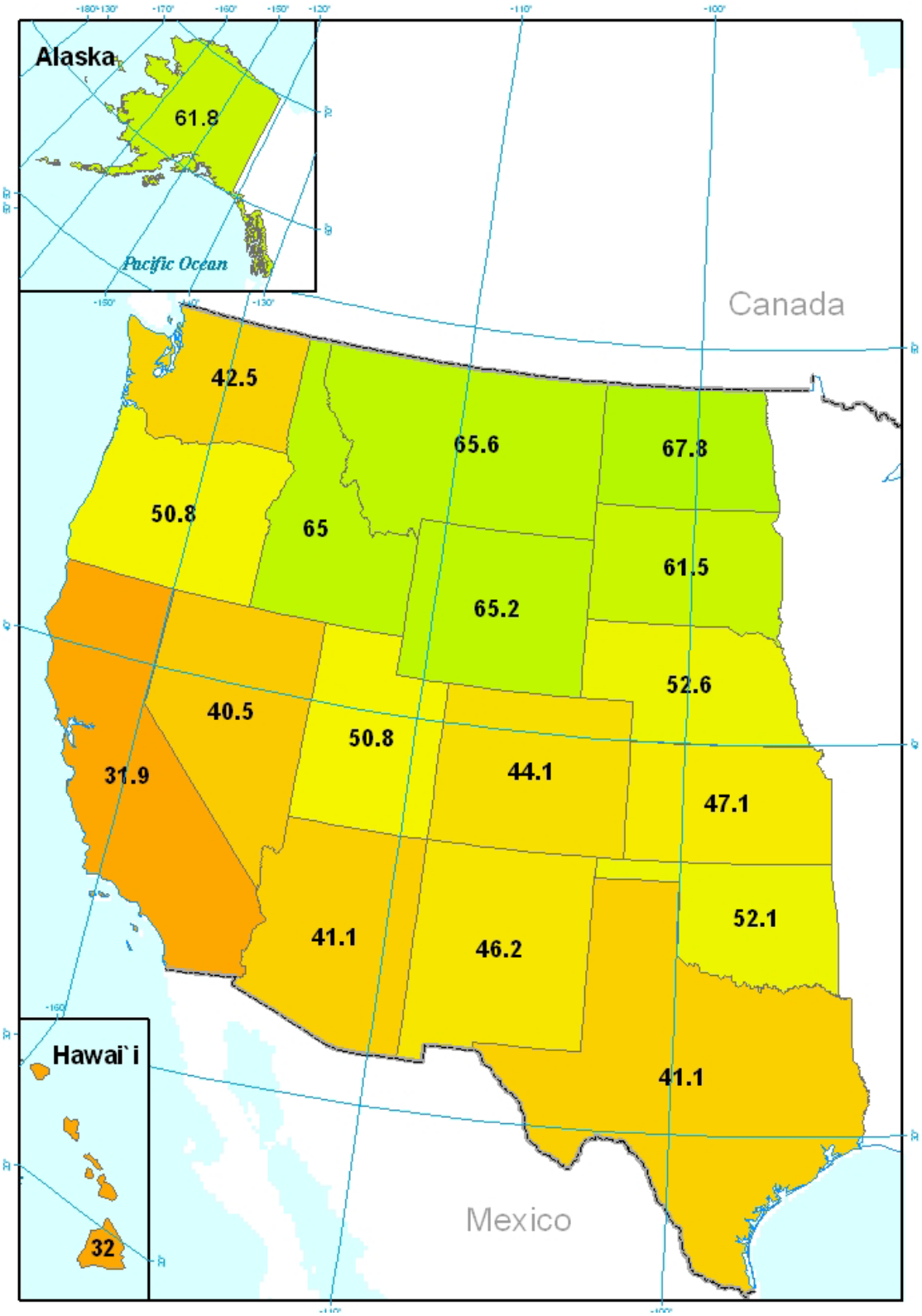


Figure IV.B.4. Percent of respondents finding the action "provide more recreational opportunities to hunt bears" acceptable when human deaths have occurred from bear attacks.

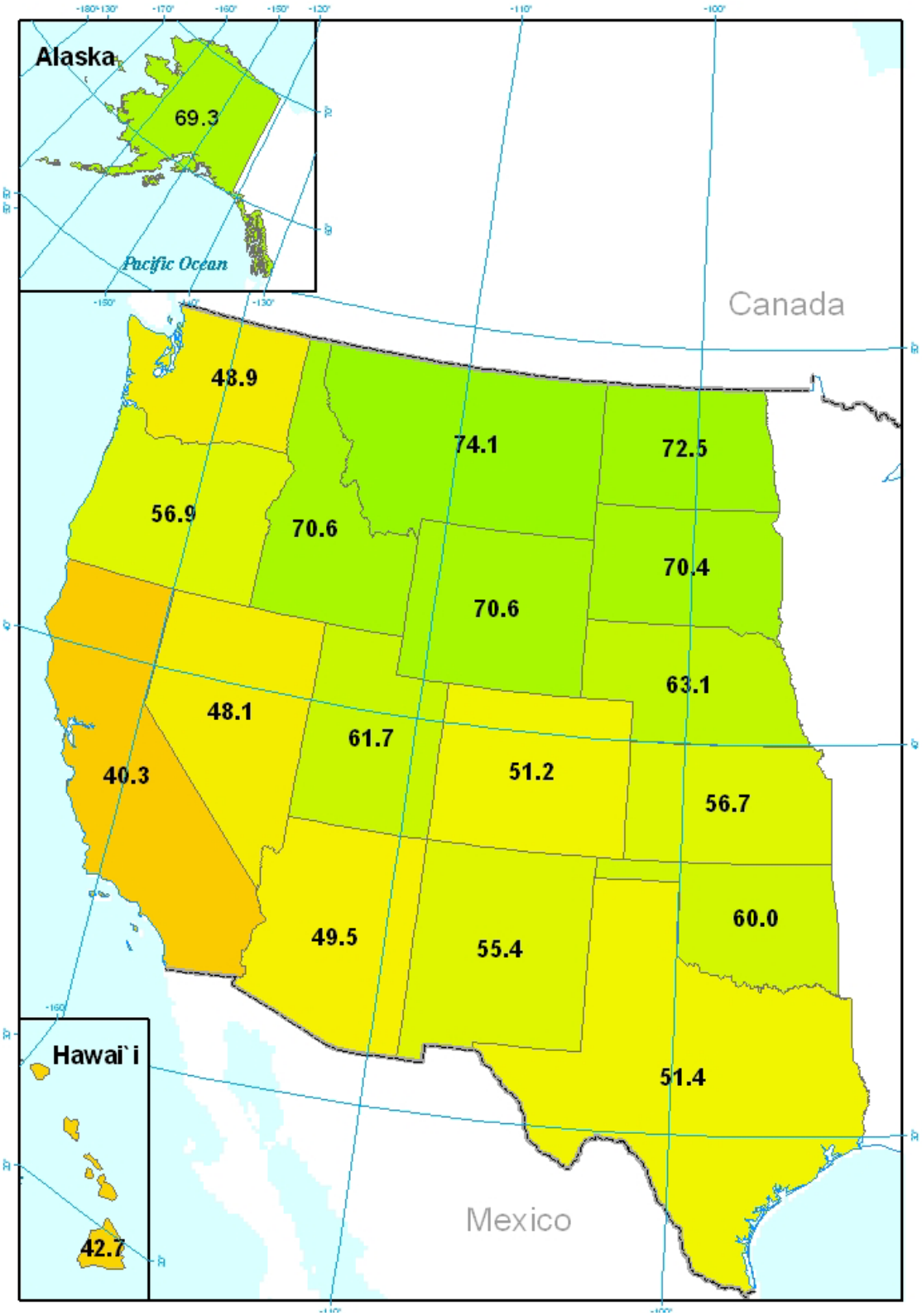


Figure IV.B.5. Percent of respondents finding the action "conduct controlled hunts using trained agency staff" acceptable when bears are getting into trash and pet food containers.

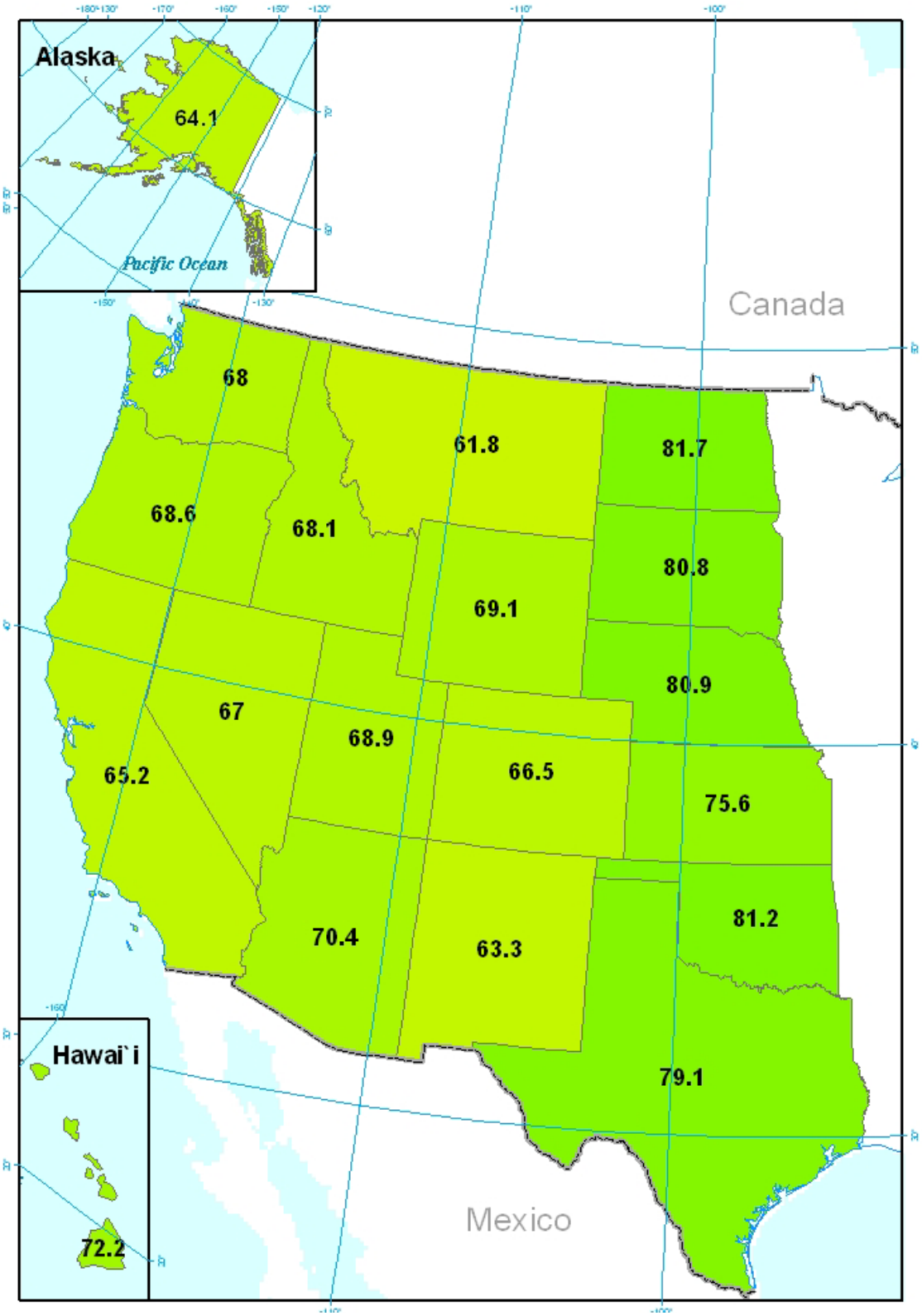
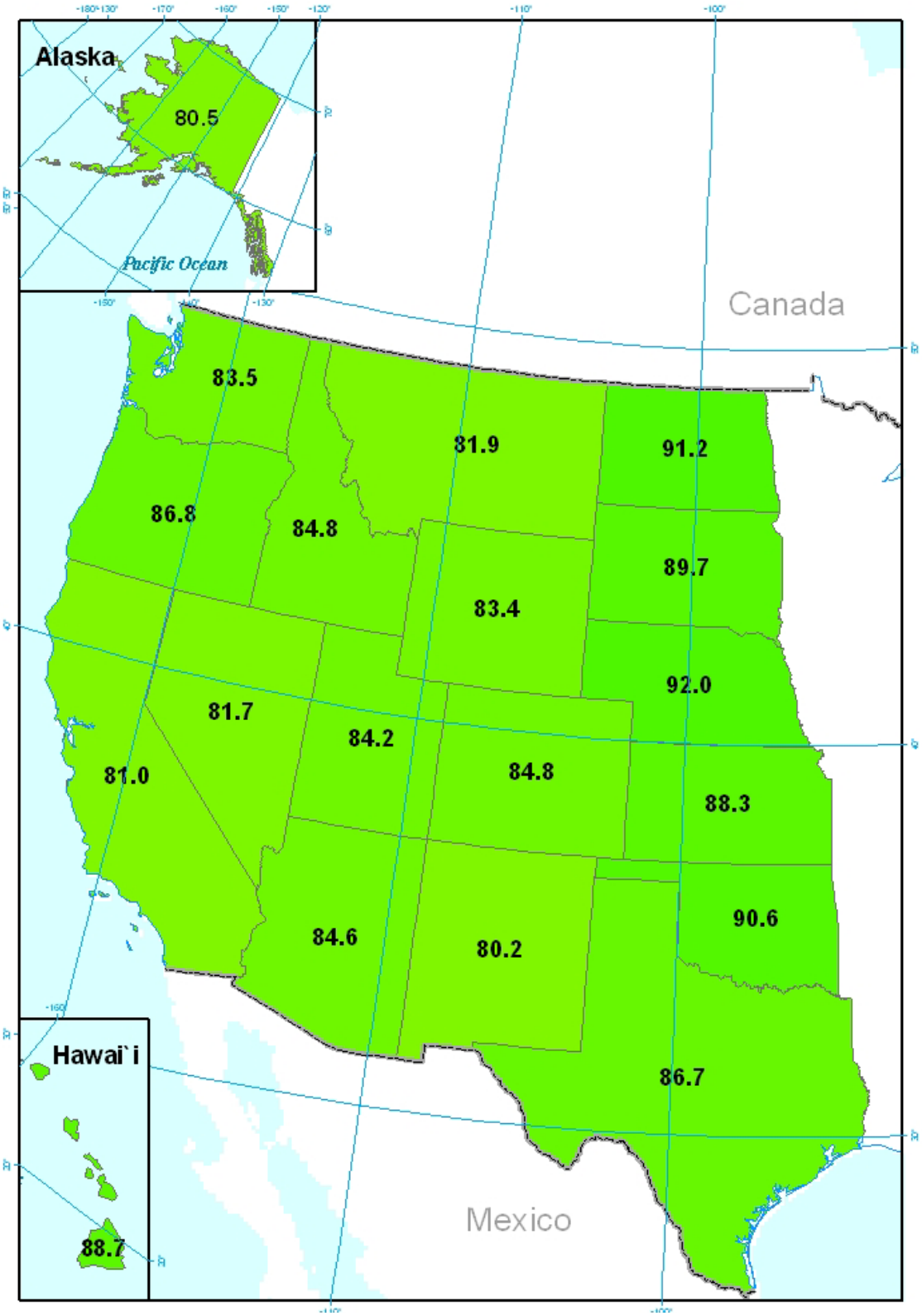


Figure IV.B.6. Percent of respondents finding the action "conduct controlled hunts using trained agency staff" acceptable when human deaths have occurred from bear attacks.



Figures IV.B.7 through IV.B.16 display the public's perceptions of the acceptability of each management action for the deer situations. The responses to each management action are displayed in order with situation 1 followed by situation 2. The color scheme for these maps ranges from red to yellow to green, including various shades of the colors. Dark red designates that an action had the lowest percent of acceptability, or it was highly unacceptable to the public in the state. Dark green designates that an action had the highest percent of acceptability, or it was highly acceptable to the public in the state.

Summary of results. The majority of the respondents in all states did not find it acceptable to do nothing to control deer populations when deer are eating shrubs and garden plants. They found it even less acceptable to do nothing when deer are carrying a disease that is transmissible to some domestic animals and livestock. The majority of the respondents in all states found it acceptable to provide more recreational opportunities to hunt deer and conduct controlled hunts using agency staff in both situations. In all states there was an increase in acceptability of conducting controlled hunts when deer are carrying a disease. There was an increase in acceptability of this action as compared to recreational hunting opportunities in only some states for both situations—unlike in the bear situations. The majority of the respondents in all states did not find it acceptable to distribute pellets containing contraceptives causing deer to become unable to produce offspring *permanently* in both situations. In all states distributing permanent contraception was more acceptable when deer are carrying a disease. States varied greatly on the acceptability of distributing pellets containing contraceptives causing deer to become unable to produce offspring *for only a few breeding seasons* when deer are eating shrubs and garden plants. The majority of the respondents in all states did find it acceptable to distribute pellets containing contraceptives causing deer to become unable to produce offspring *for only a few breeding seasons* when deer are carrying a disease that is transmissible to some domestic animals and livestock. The action was more acceptable in all states than distributing permanent contraception in both situations.

Figure IV.B.7. Percent of respondents finding the action "do nothing to control deer populations" acceptable when deer are eating shrubs and garden plants.

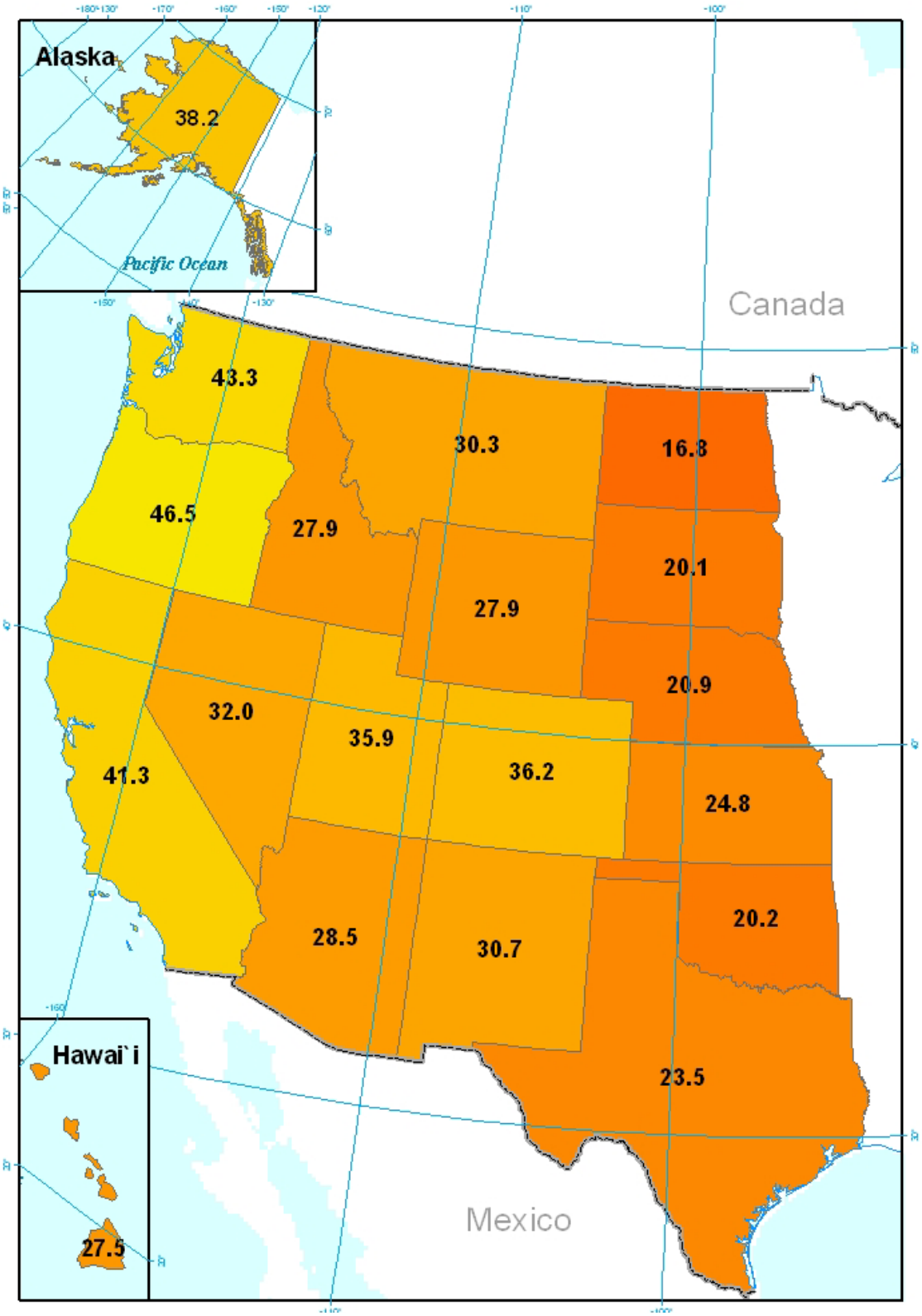


Figure IV.B.8. Percent of respondents finding the action "do nothing to control deer populations" acceptable when deer are carrying a disease that is transmissible to some domestic animals and livestock.

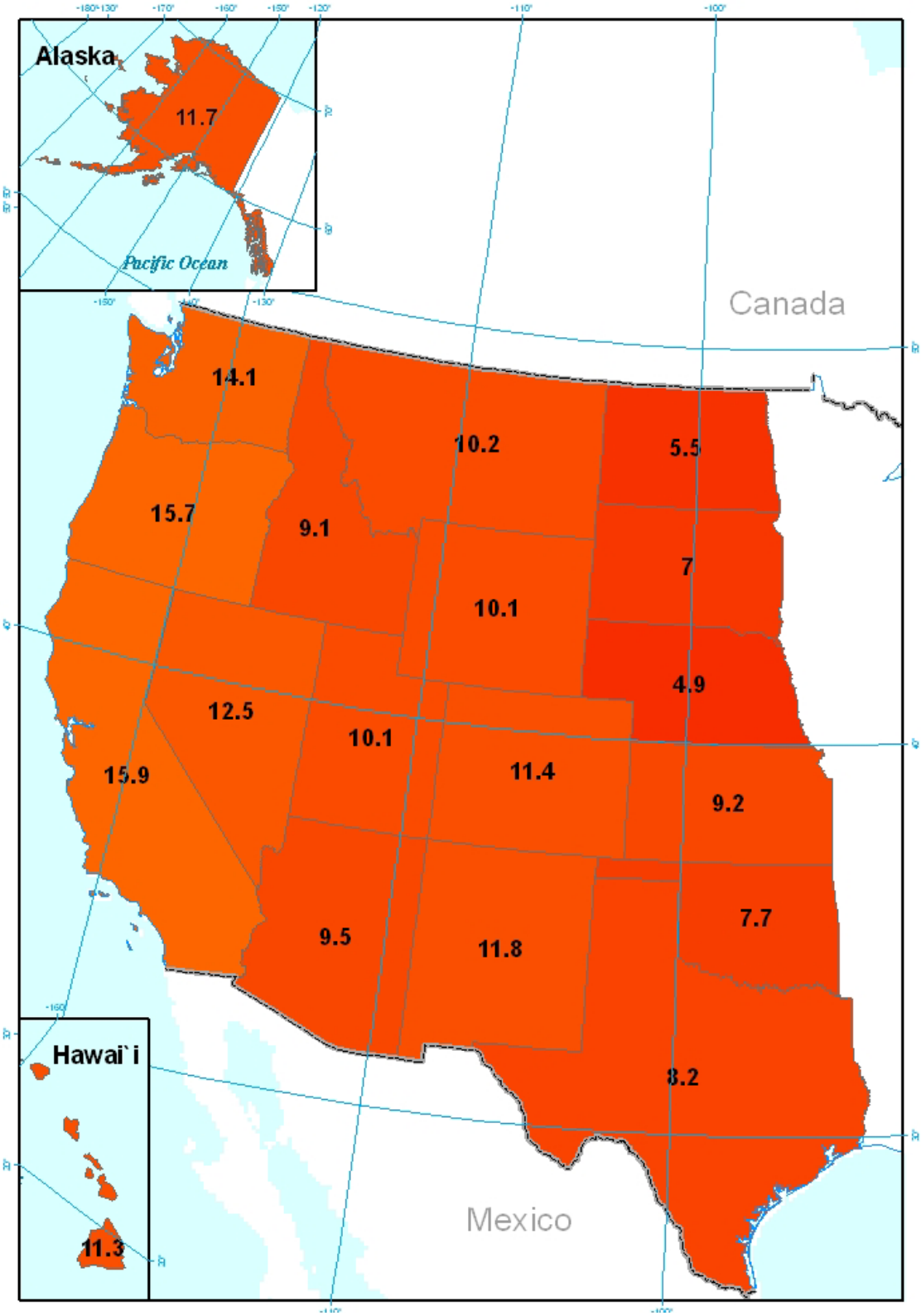


Figure IV.B.9. Percent of respondents finding the action "provide more recreational opportunities to hunt deer" acceptable when deer are eating shrubs and garden plants.

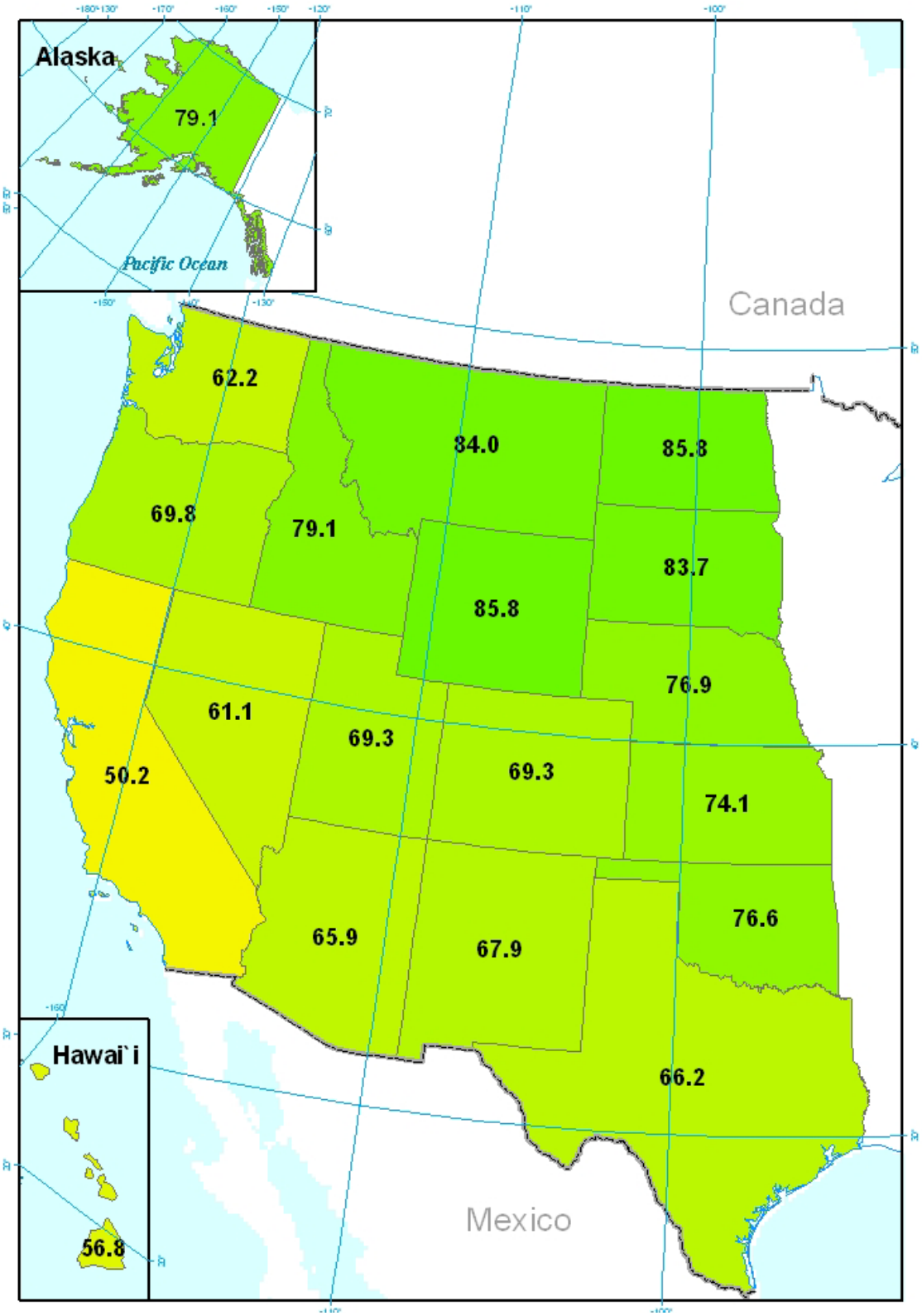


Figure IV.B.10. Percent of respondents finding the action "provide more recreational opportunities to hunt deer" acceptable when deer are carrying a disease that is transmissible to some domestic animals and livestock.

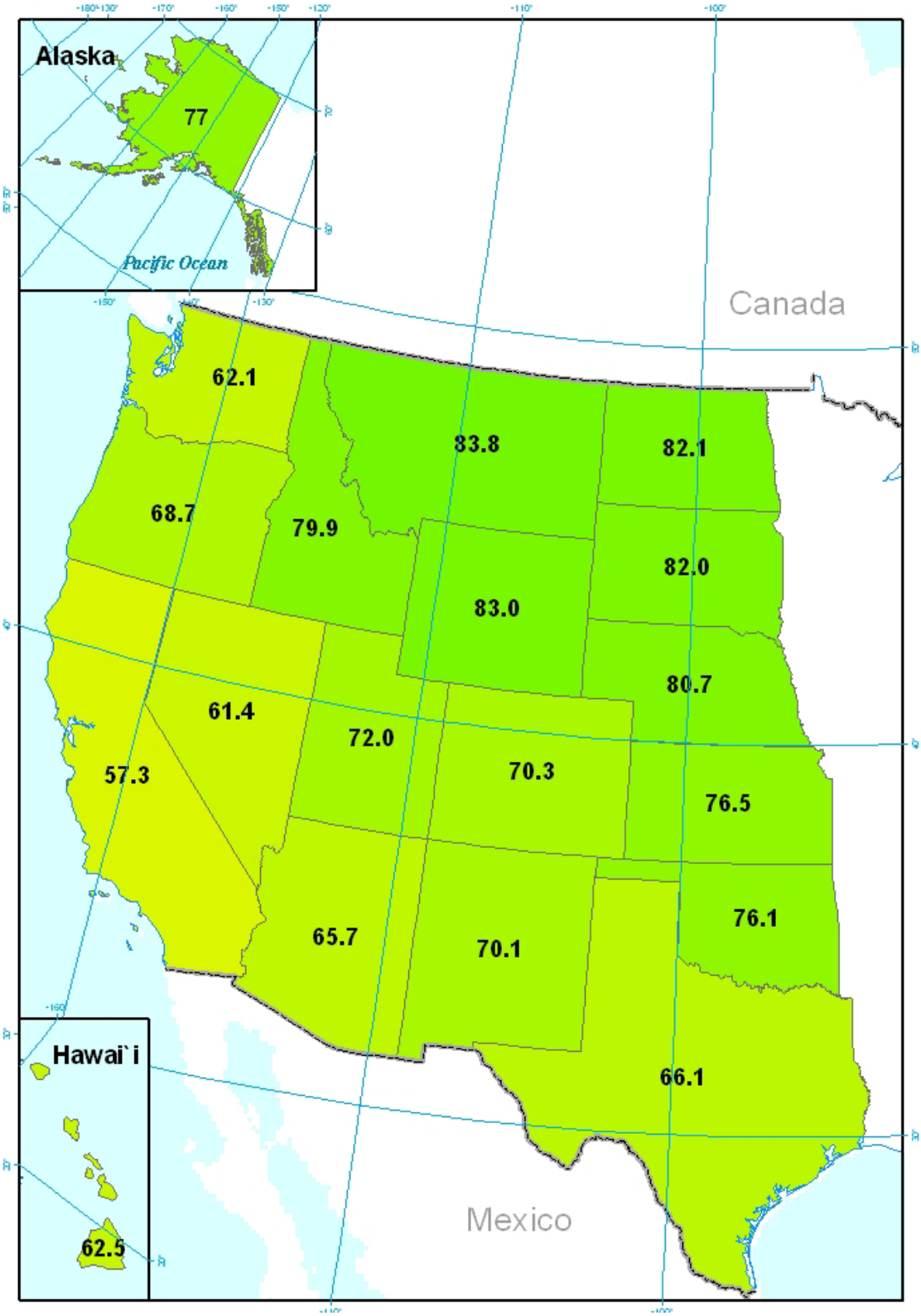


Figure IV.B.11. Percent of respondents finding the action "conduct controlled hunts using trained agency staff" acceptable when deer are eating shrubs and garden plants.

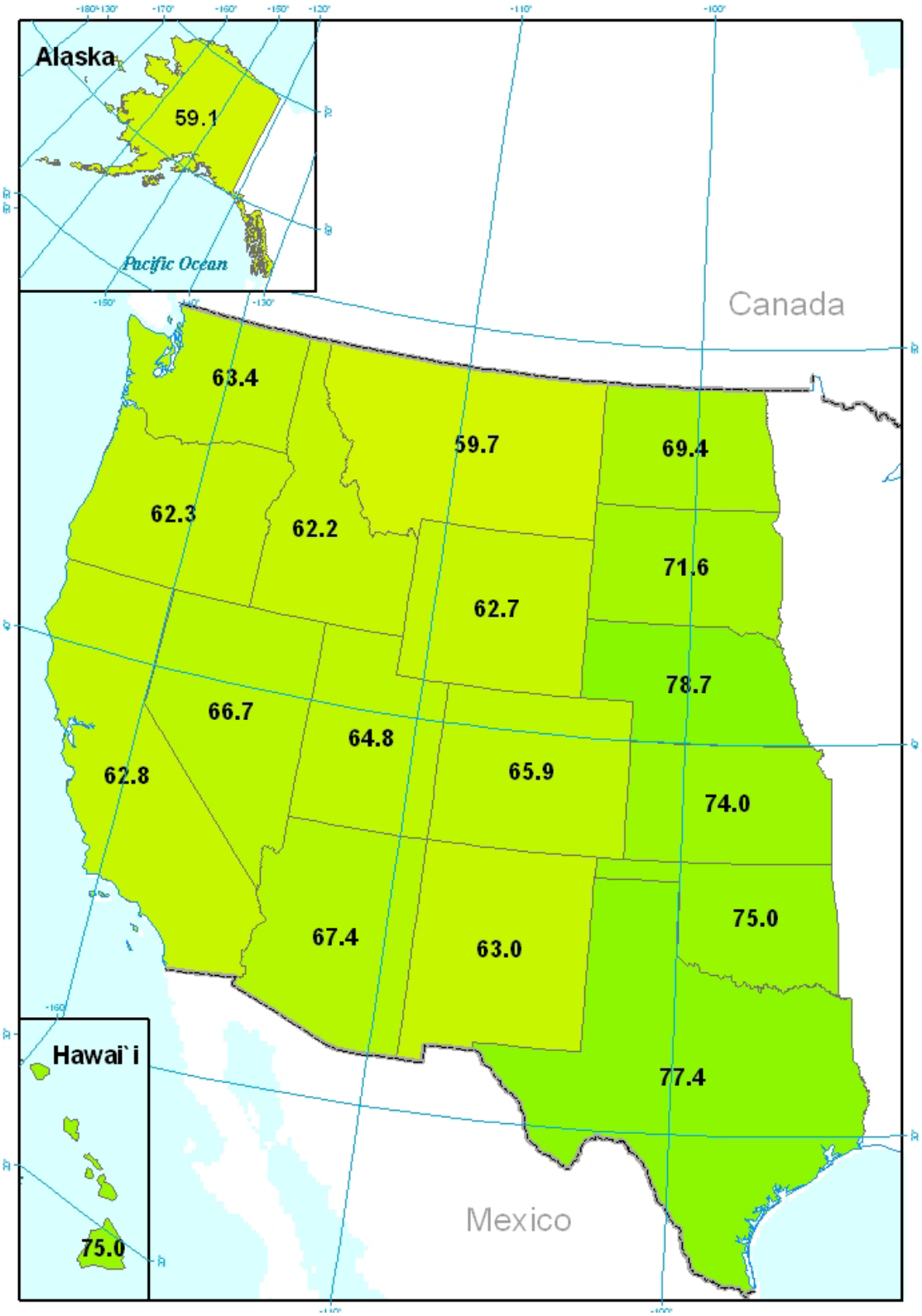


Figure IV.B.12. Percent of respondents finding the action "conduct controlled hunts using trained agency staff" acceptable when deer are carrying a disease that is transmissible to some domestic animals and livestock.

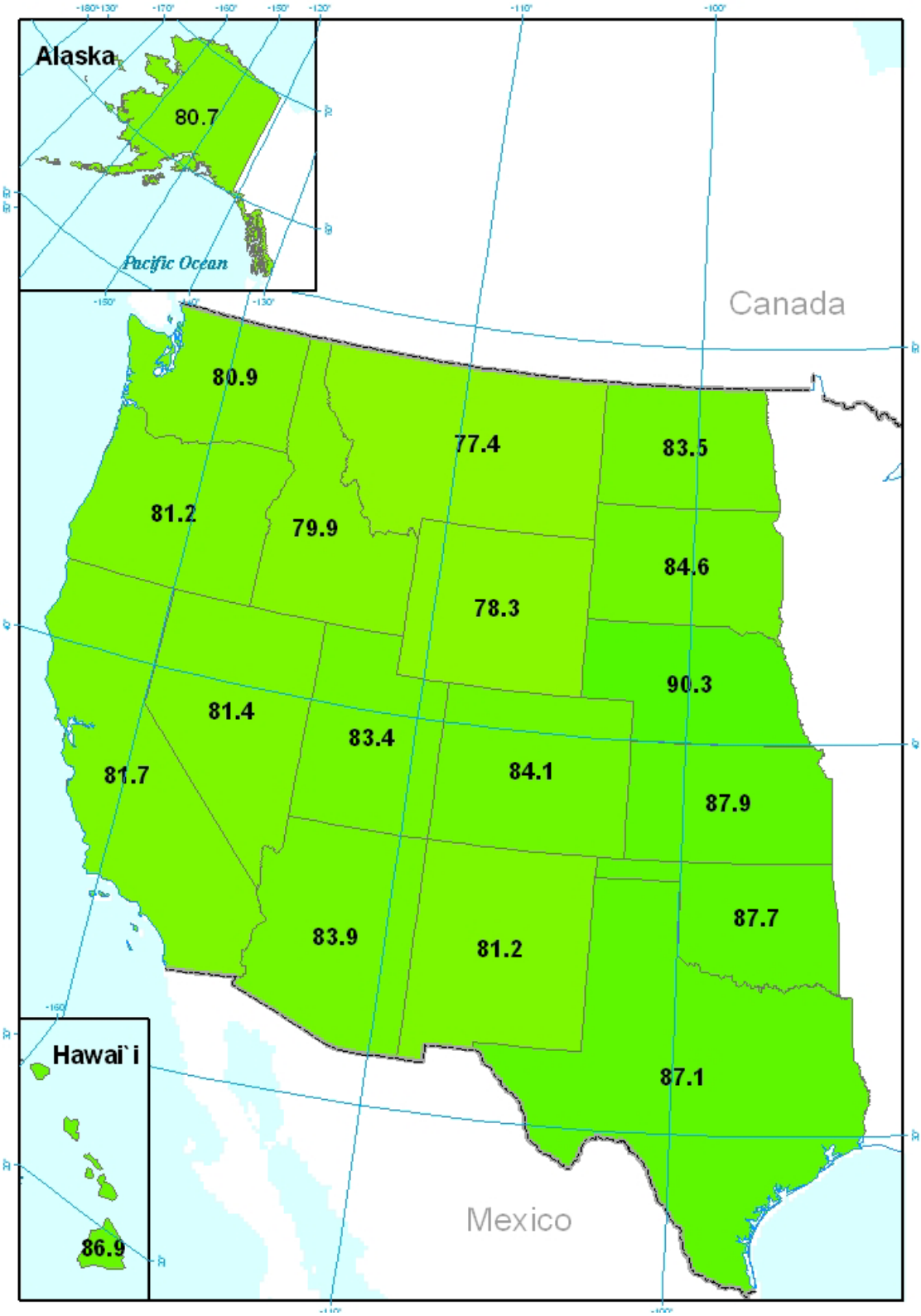


Figure IV.B.13. Percent of respondents finding the action "distribute pellets containing contraceptives, causing deer to become unable to produce offspring *permanently*" acceptable when deer are eating shrubs and garden plants.

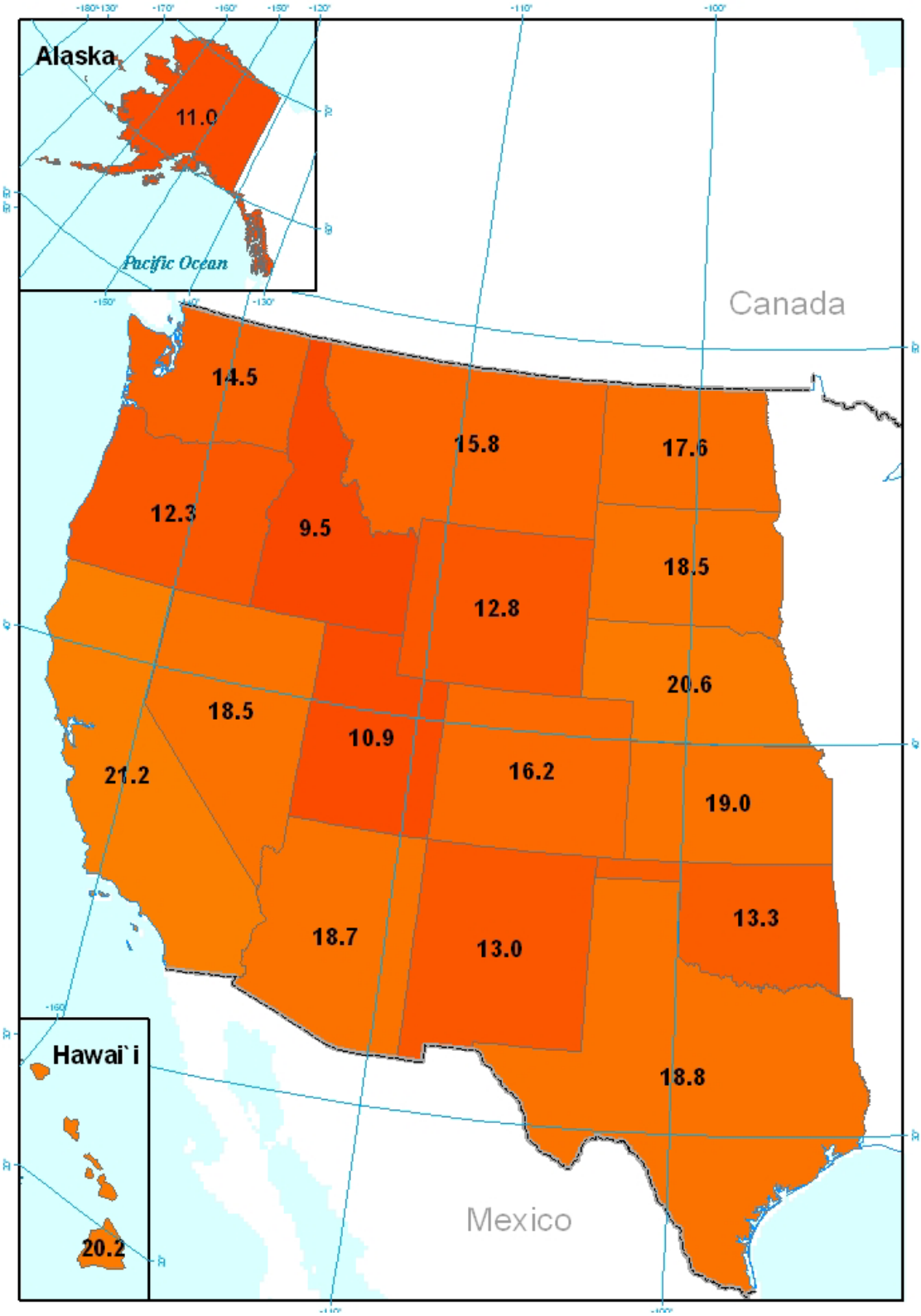


Figure IV.B.14. Percent of respondents finding the action "distribute pellets containing contraceptives, causing deer to become unable to produce offspring *permanently*" acceptable when deer are carrying a disease that is transmissible to some domestic animals and livestock.

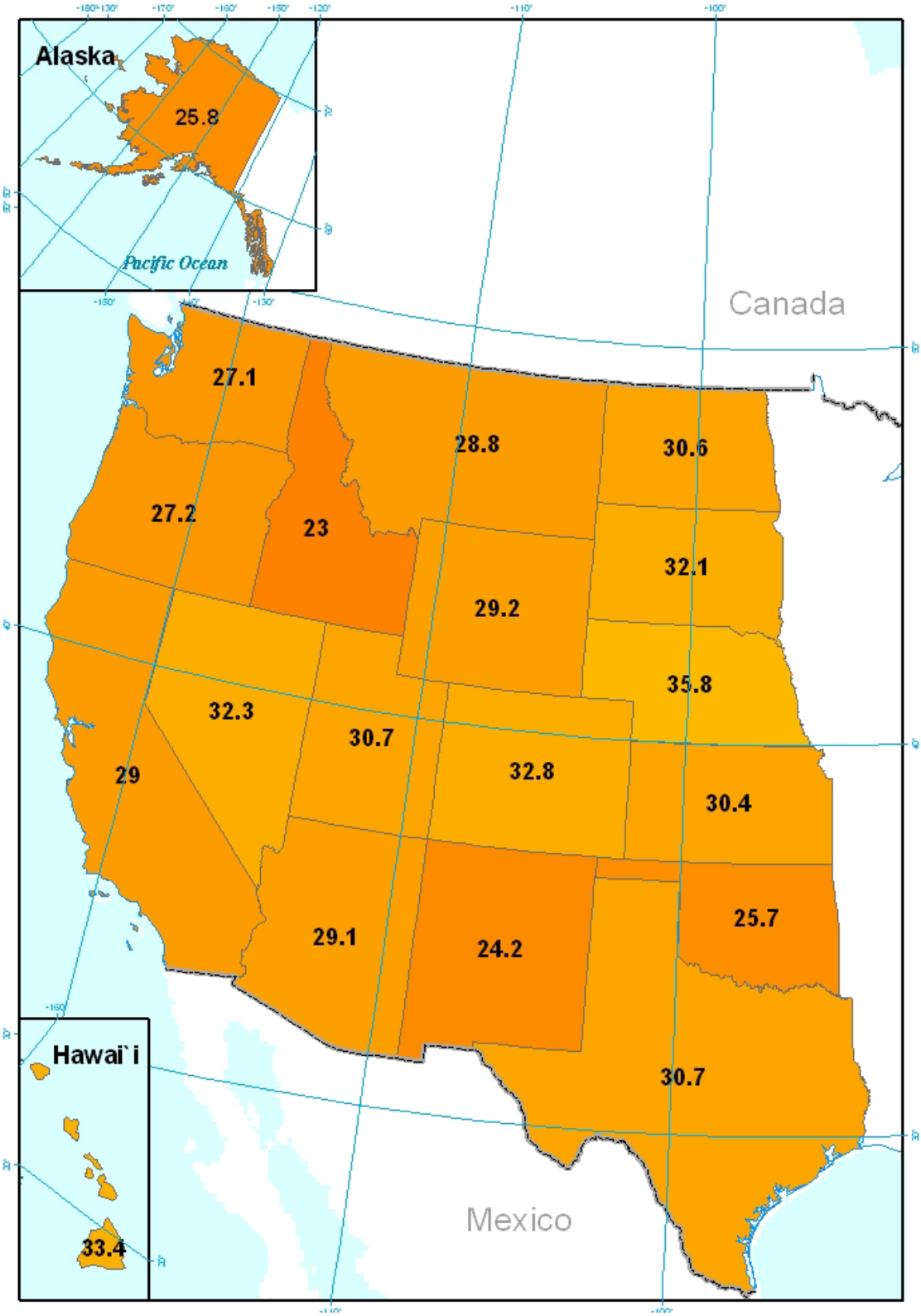


Figure IV.B.15. Percent of respondents finding the action "distribute pellets containing contraceptives, causing deer to become unable to produce offspring *for only a few breeding seasons*" acceptable when deer are eating shrubs and garden plants.

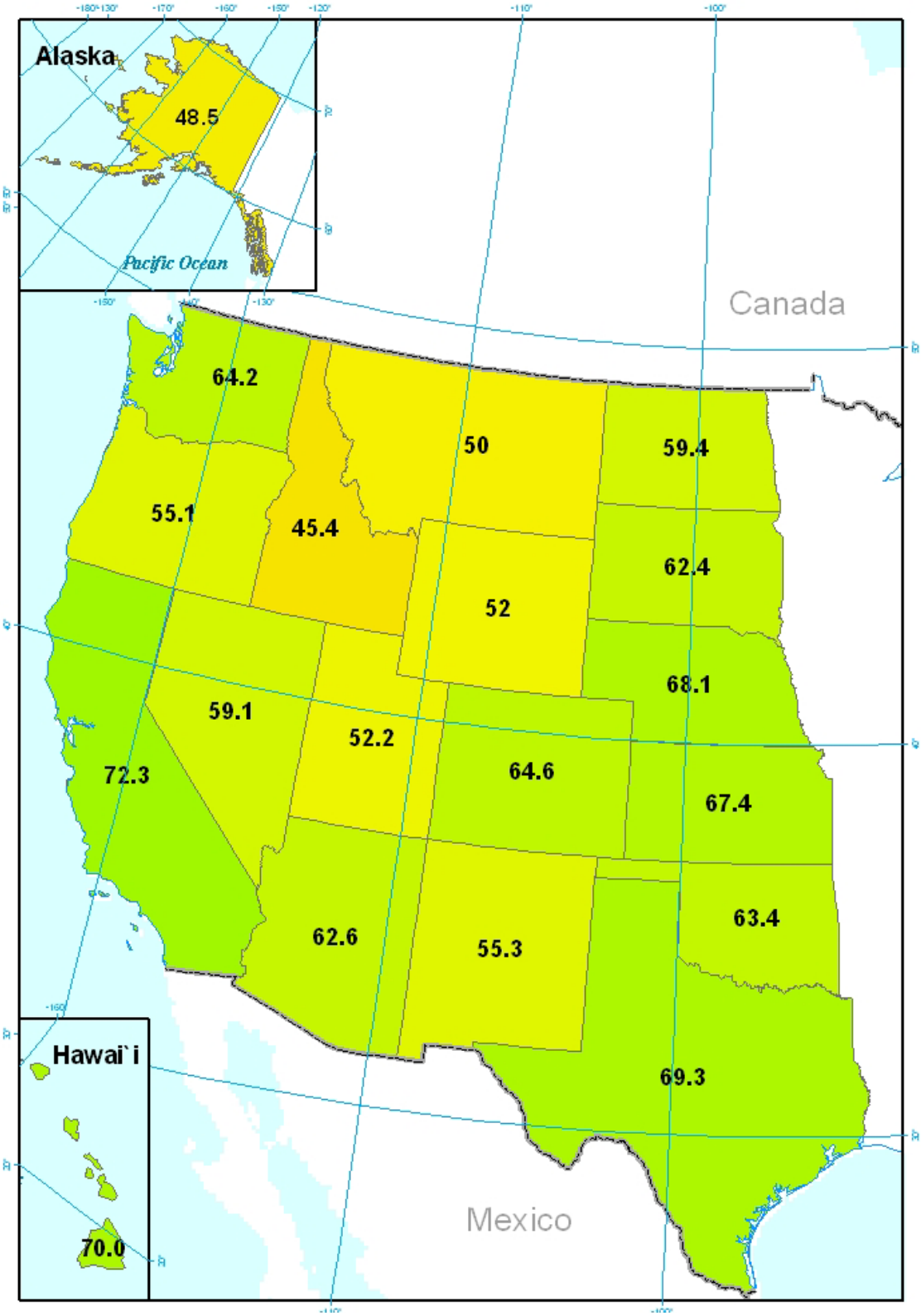
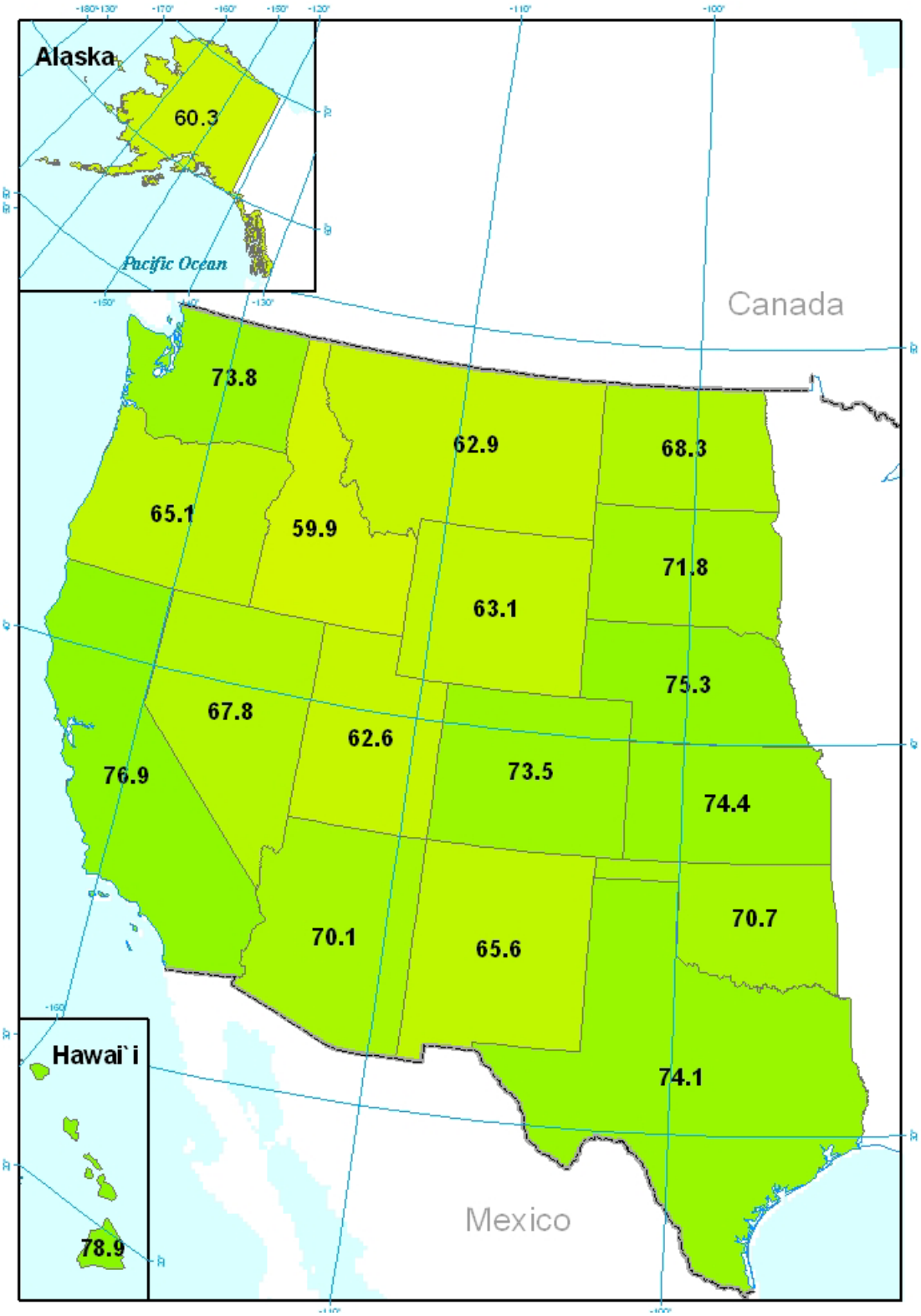


Figure IV.B.16. Percent of respondents finding the action "distribute pellets containing contraceptives, causing deer to become unable to produce offspring *for only a few breeding seasons*" acceptable when deer are carrying a disease that is transmissible to some domestic animals and livestock.



SECTION V. PUBLIC PERCEPTIONS RELATED TO MANAGING FOR BIODIVERSITY AND SPECIES OF CONCERN

[RESULTS FOR STUDY OBJECTIVE 5]

This section of the survey was designed to provide information useful in the development of state Comprehensive Wildlife Conservation Strategies (CWCS). Data from the Wildlife Values in the West project can contribute in a number of ways to states' CWCS process (Teel, Manfredo, Bright, & Dayer, 2004). The information collected from the "Biodiversity" portion of the survey was designed specifically *to identify public priorities of conservation need and perceptions of biodiversity.*

Survey items in this section were developed to address basic questions relevant to CWCS: How do people prioritize biodiversity relative to other guiding management philosophies? Do people think that the agencies should manage primarily for game species to provide hunting and fishing opportunities, or should the focus be more on sustaining a broad array of species? Is managing for native species preferred by people, or is it acceptable to allow nonnative species to thrive in an area? Is restoration of native species acceptable even if it means that nonnative species commonly hunted or fished may suffer? Through discussions of these questions, state agency personnel and researchers from Colorado State University identified "categories of difficult choices" related to the topic of managing for biodiversity and species of concern. These categories reflect the types of choices that managers are often faced with when deciding what species should receive the greatest management attention. Survey questions were developed to address the following categories of "difficult choices":

1. Species status (common, declining, and extirpated)
2. Species origin (native and nonnative)
3. Species use (game and nongame)

A. METHODS

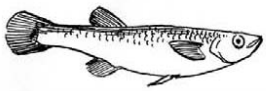
The Survey Questions

The biodiversity survey items included a series of hypothetical choices the respondent would make between "example" species that had different characteristics. The respondents were first provided with the following introductory paragraph.

> **A fish and wildlife agency manager of a particular area may have limited funds to spend on conservation programs for fish and wildlife. As a result, difficult choices must be made about what type of fish or wildlife deserves the greatest priority. This often involves evaluating different combinations of characteristics of the fish or wildlife. Below is a series of hypothetical comparisons that illustrate the kinds of choices that might be made for an area. *For each comparison please select the choice with the characteristics you think the manager should spend funds on to maintain or enhance the fish or wildlife population.***
>
> ***These are hypothetical comparisons.*** *Even though some of these fish or wildlife may not be present where you live, we are still interested in your opinions.*

Following this introduction, respondents were provided with eight hypothetical scenarios each of which required a choice between two wildlife species with certain characteristics. Each characteristic was represented by a statement describing a particular level (e.g., native or nonnative) of each of the three species factors (i.e., status, origin, use). Based on the number of species factors and their levels, the orthogonal design function in SPSS® 13.0 (SPSS, Inc., 2004) determined both the appropriate number and nature of hypothetical scenarios necessary to effectively examine the effects of each species factor and factor level on species choice. For each scenario, respondents were asked to indicate *which species should the manager spend funds on?* For example, respondents in some states were asked to make a choice between the following two species:

1. Which should the manager spend funds on? *(Check one ☑.)*

❒ CHOICE A		❒ CHOICE B
➢ This species does not naturally occur in the area. It was introduced by humans. ➢ Common in the area, and numbers are stable. ➢ Not a hunted/fished species. **Example: Mosquitofish** 	⇔ *OR*	➢ This species naturally occurs in the area. ➢ Numbers are low, which means you don't see this species very often anymore. ➢ Hunted/fished species. **Example: Cutthroat Trout** 

In addition to the choice between two example species with the above characteristics, respondents were given seven additional scenarios for which they were asked to choose between species that had different status, origin, and use characteristics.

Six versions of the eight scenarios were developed and sent to subregions within the sample population. Each version had the same species factors and factor level comparisons. However different example species were used for each subregion to reflect the wildlife species that were common for states within a subregion. Four subregions were created. Alaska and Hawai`i were not included in a subregion but were treated separately (i.e., separate survey version and analysis) due to the unique nature of relevant wildlife species and species factor levels used in the scenarios specific to those states.

The four subregions were:

Subregion 1. California, Idaho, Oregon, Washington
Subregion 2. Kansas, Nebraska, Oklahoma, Texas
Subregion 3. Montana, North Dakota, South Dakota, Wyoming
Subregion 4. Arizona, Colorado, Nevada, New Mexico, Utah

Figures V.A.1, V.A.2, and V.A.3 present the comparisons of specific species included on each subregion survey.

Figure V.A.1. Species comparison for each scenario by species status across subregions.

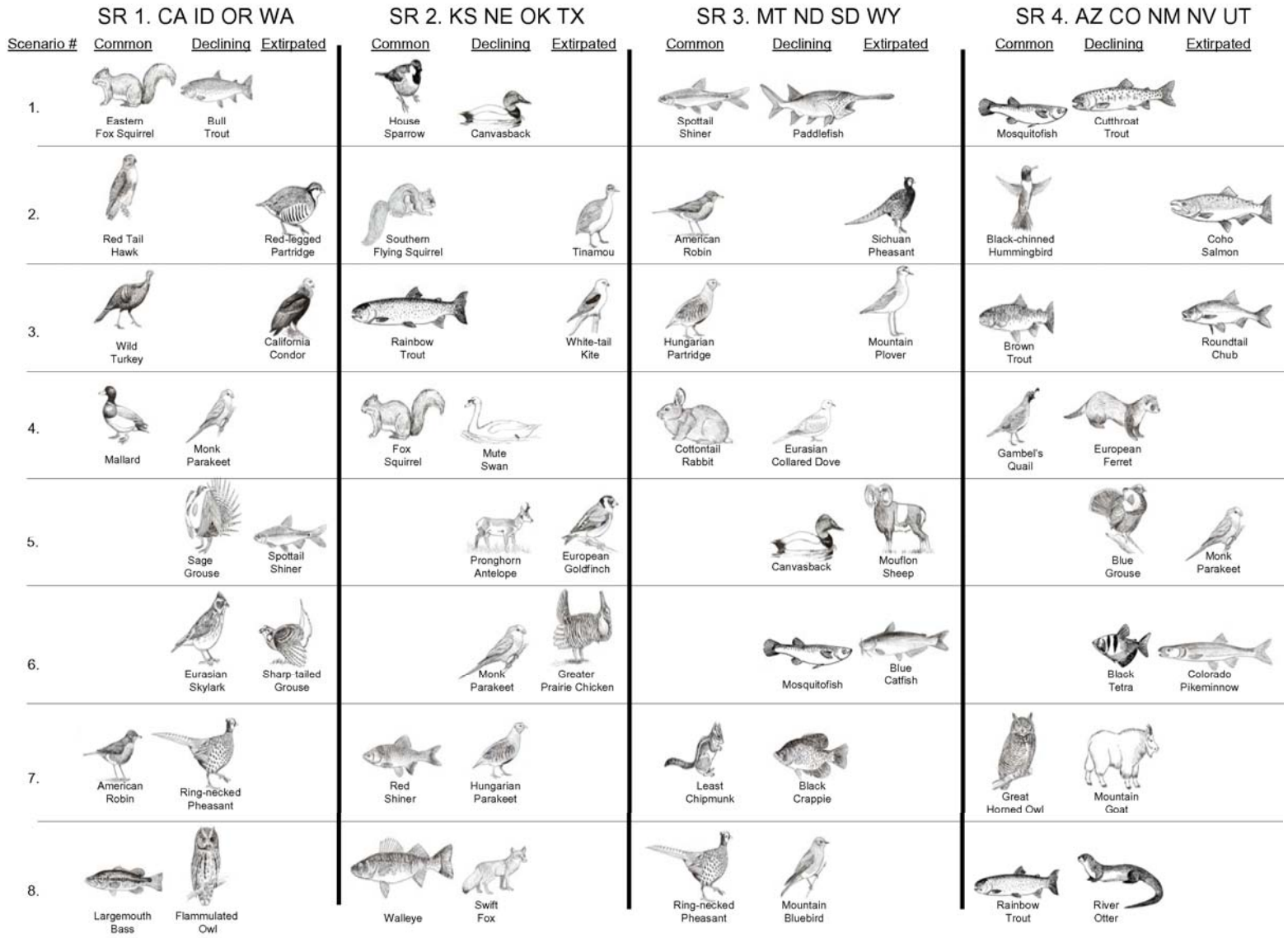


Figure V.A.2. Species comparison for each scenario by species origin across subregions.

Figure V.A.3. Species comparison for each scenario by species use across subregions.

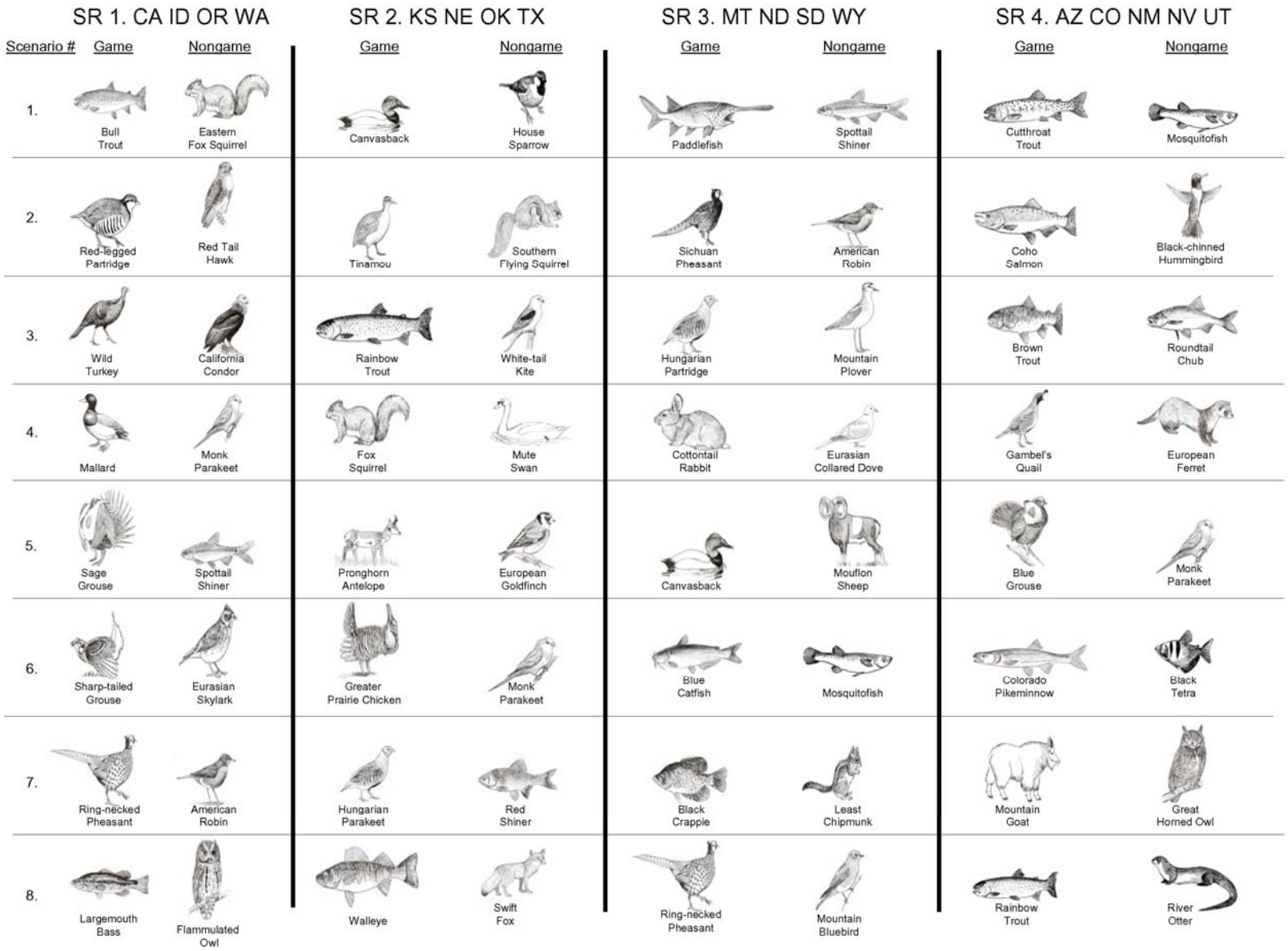


Figure V.A.1 presents the species for each of the eight scenarios based on species status (common, declining, and extirpated) for each subregion. For example, scenario 1 for each subregion contrasted a common and declining wildlife species. In subregion 1, these species were the Eastern Fox Squirrel and Bull Trout, respectively. For subregion 2, these species were the House Sparrow and Canvasback, respectively, and so on for subregions 3 and 4. Figure V.A.2 shows the same eight scenarios for each subregion by species origin (native and nonnative). For scenario 1, subregion 1, the Bull Trout represents the native species and the Eastern Fox Squirrel represents the nonnative species. Figure V.A.3 describes the same eight scenarios for each subregion by species use. Again, for scenario 1, subregion 1, the Bull Trout represents the game species while the Eastern Fox Squirrel represents the nongame species.

Justification of the Method

A common approach to analyzing responses to the eight scenarios is to present the percent of respondents that supported each species. While this provides basic information about preferences of one wildlife species over another, it does not assess the relative impacts of each of the characteristics of those species. If respondents preferred that conservation funding be allocated to an owl species over a deer species, how much of this preference is due to the status of the species (common, declining, or extirpated), its origin (native or nonnative), or use (game or nongame)? To answer this, a more complex statistical analysis was necessary.

The eight "paired comparisons" (i.e., scenarios) were analyzed using *stated choice modeling* following procedures described in *Stated Choice Methods: Analysis and Application* (Louviere, Hensher, & Swait, 2003). Stated choice modeling allowed us to (a) combine the responses, or choices, generated for each comparison and (b) obtain estimates of the relative effects of each species factor and species factor level on species choice. This type of approach can provide more information about factors that influence choices than the descriptive approach described above. For example, while the public may prefer that managers allocate conservation funding to the management of the Dall's Sheep (a native species) over the European Rabbit (a nonnative species), this preference may be due primarily to the fact that the Dall's Sheep is a game animal and the European Rabbit is not – not whether it is a native or nonnative species. Stated choice modeling allows us to determine this.

Research Goals

Our approach to analyzing the biodiversity scenarios was designed to understand how the three species factors (status, origin, and use) and the levels of each of those factors influence support for a particular wildlife species for conservation funding. There were two primary goals and corresponding research questions (RQ) for this analysis:

Goal 1. To understand what factors influence public preferences for committing agency resources to the maintenance or enhancement of a wildlife species.

RQ1. Which species factor is most important in influencing public preferences for funding the conservation of a species: status, origin, or use?

Goal 2. To understand what specific characteristics of wildlife species (i.e., factor levels) drive what species the public feel should be emphasized in wildlife conservation decisions.

RQ2. What is the likelihood that an individual would prefer, for conservation funding, a common species versus a declining species versus an extirpated species? [species status]

RQ3. What is the likelihood that an individual would prefer, for conservation funding, a native species versus a nonnative species? [species origin]

RQ4. What is the likelihood that an individual would prefer, for conservation funding, a game species versus a nongame species? [species use]

Each of these research questions was answered based on (1) geography; subregions within the western region, (2) wildlife value orientation type, and (3) participation in hunting and fishing.

Statistical Analysis

Research questions were analyzed using logistic regression within the stated choice model. The choice between two wildlife species across the eight hypothetical scenarios was a dichotomous dependent variable. The independent variables were the factor levels that apply to each species. The analysis determined what the relative effects of each species factor level were on species choice. The following statistics were generated by this analysis:

Estimated coefficient (utility score) – This statistic measures strength of association between a species factor level (the independent variable) and species choice (the dependent variable). This statistic is used to compute average importance of a species factor and the odds ratio for specific factor characteristics or levels.

Average importance – This statistic estimates the relative importance of the overall species factor in influencing public preference of a species for conservation funding. The sum of the average importance of each species factor in an analysis totals 100. This statistic was used to answer RQ1.

Odds ratio – This statistic estimates the likelihood that a wildlife species with a specific factor level would be selected over a species with another factor level, controlling for the effects of other species factors. Stated choice modeling identifies one factor level within a species factor as a "reference" level and the other level(s) as "nonreference." The odds ratio compares the likelihood that a wildlife species with a nonreference characteristic would be supported over one with the reference characteristic, controlling for the presence of the other species factors within the scenarios. The table below shows the reference and nonreference factor levels for each species factor. As an example, for species status, logistic regression created an odds ratio comparing a declining species with a common species and an extirpated species with a common species, controlling for the effects of species origin and species use.

Table V.A.1. Reference and non-reference species factor levels.

Species factor	Reference level	Nonreference level(s)
Species status	Common	Declining; Extirpated
Species origin	Nonnative	Native
Species use	Nongame	Game

An odds ratio of 1.35 for a declining species means that it is 1.35 times more likely to be supported for conservation funding than a common species controlling for the fact that species also differ on origin and use. The odds ratio was used to answer RQ2, RQ3, and RQ4.

B. RESULTS

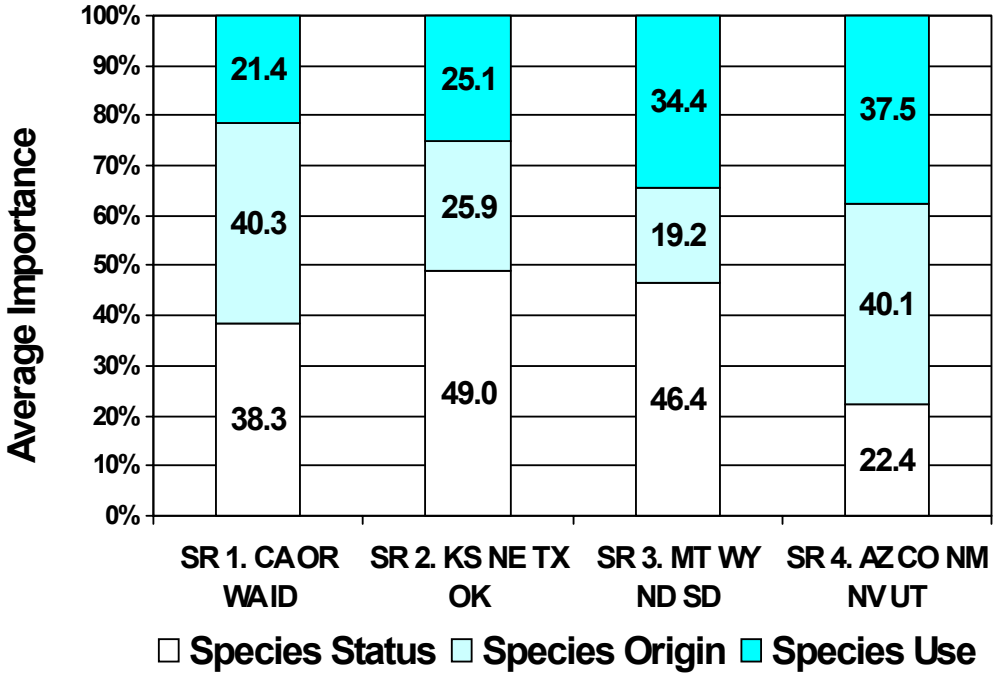
Geography; Subregions within the Western Region

The first goal was to understand what factors influence public preferences for committing agency resources to the maintenance or enhancement of a wildlife species. Since the surveys for each subregion contained different wildlife species representing the "status by origin by use" comparisons across the eight scenarios, we examined each of the research questions for each subregion separately, with an eye on any differences in average importance scores and odds ratios that might occur across subregions.

RQ1. Which species factor is most important in influencing public preferences for funding the conservation of a species: species status, species origin, or species use?

Figure V.B.1. compares the subregions on the average importance of each species factor in preference for conservation funding. For subregion 1 (California, Idaho, Oregon, Washington) species origin (AI = 40.3) and species status (AI = 38.3) were the most important factors, while species use was the least important factor for this subregion (AI = 21.4). The most important factor for subregion 2 (Kansas, Nebraska, Oklahoma, Texas) was species status (AI= 49.0). The importance of species origin (AI = 25.9) and species use (AI = 25.1) were less important for subregion 2. Species status (AI = 46.4) was also the most important factor for subregion 3 (Montana, North Dakota, South Dakota, Wyoming). However, species use (AI = 34.4) was more important for this subregion than was species origin (AI = 19.2). For subregion 4 (Arizona, Colorado, Nevada, New Mexico, Utah) species origin (AI = 40.1) and species use (AI = 37.5) were the two most important factors while species status (AI = 22.4) was the least important.

Figure V.B.1. Average importance of species factors by subregion.

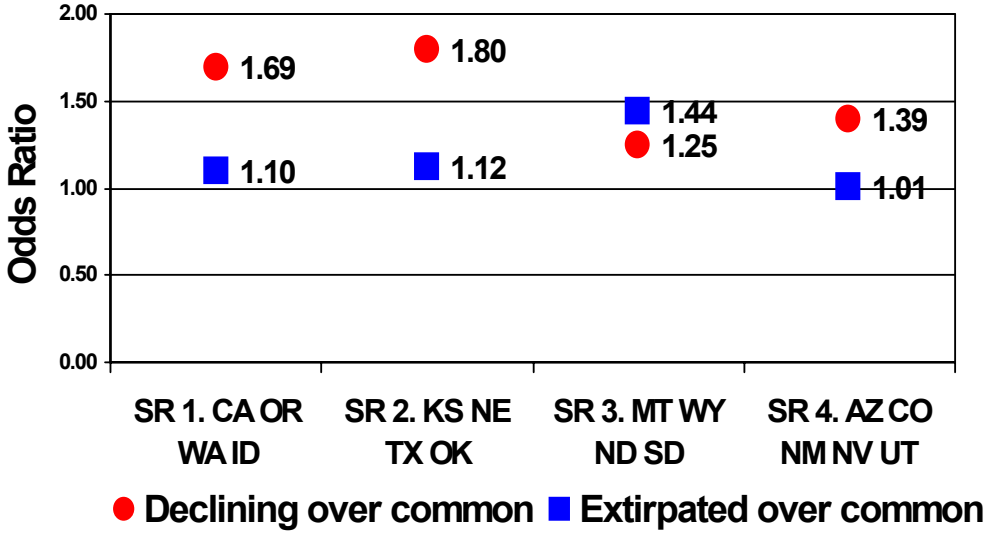


The second goal of the study was to understand what specific characteristics of wildlife species the public felt should be emphasized in wildlife conservation decisions. Research questions 2, 3, and 4 explored the impacts of different levels of species status, origin, and use on conservation funding preference, respectively.

RQ2. What is the likelihood that an individual would prefer, for conservation funding, a common species versus a declining species versus an extirpated species? [species status]

Figure V.B.2 compares the subregions on the species status odds ratios. Controlling for species origin and use, conservation funding support for declining species was much more likely than for common species in subregions 1 (odds ratio = 1.69), 2 (odds ratio = 1.80), and 4 (odds ratio = 1.39). Extirpated species were only slightly more likely to be supported than common species in these subregions (odds ratios = 1.01 to 1.12). For subregion 3 (Montana, North Dakota, South Dakota, and Wyoming) the likelihood that an extirpated species would be supported for conservation funding over a common species (odds ratio = 1.44) was greater than the relative likelihood of preferring a declining species over a common species (odds ratio = 1.25).

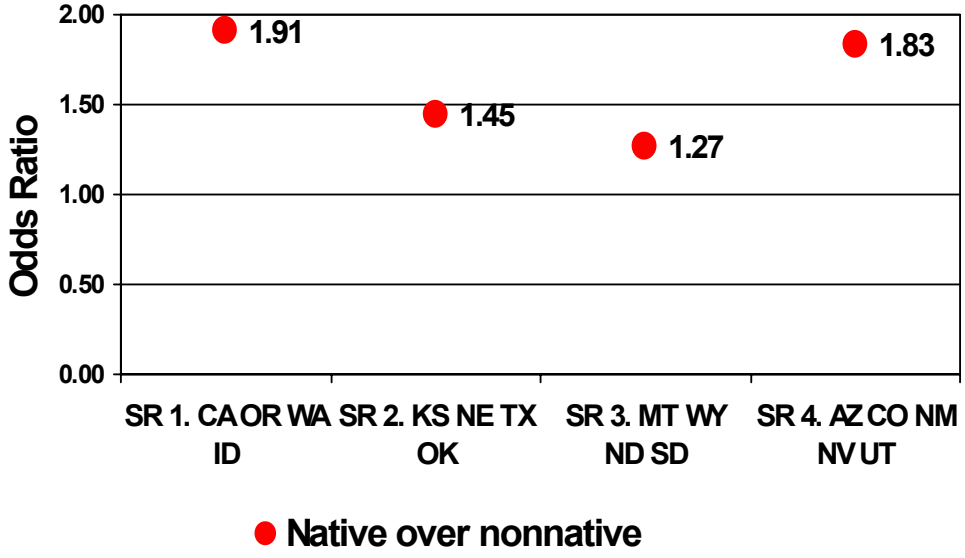
Figure V.B.2. Odds ratios of species status levels by subregion.



RQ3. What is the likelihood that an individual would prefer, for conservation funding, a native species versus a nonnative species? [species origin]

Controlling for species status and use, native species were more likely to be supported for conservation funding than were nonnative species for all subregions (Figure V.B.3.). For subregions 1 and 4, the odds of native species being chosen over nonnative species approached 2:1 (odds ratios = 1.91 and 1.83 respectively). The odds of preferring native over nonnative species for subregions 2 and 3, though positive, appeared lower (odds ratios = 1.45 and 1.27 respectively) than for subregions 1 and 4.

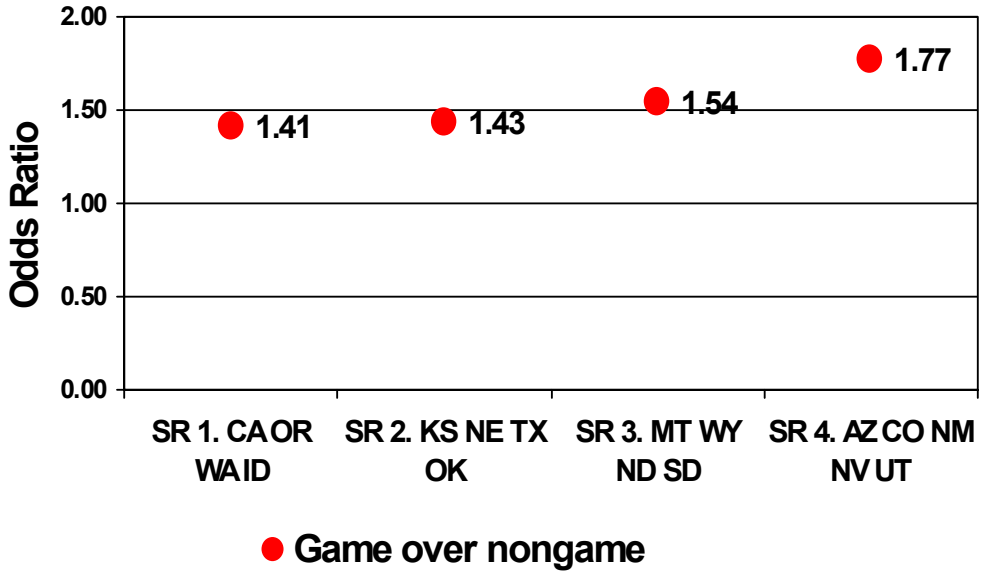
Figure V.B.3. Odds ratios of species origin levels by subregion.



RQ4. What is the likelihood that an individual would prefer, for conservation funding, a game species versus a nongame species? [species use]

Controlling for species status and origin, game species were more likely to be supported for conservation funding than were nongame species in all subregions (Figure V.B.4). The odds of preferring a game species over a nongame species were around 1.5 for subregions 1, 2, and 3 (odds ratios = 1.41, 1.43, and 1.54 respectively). Odds were higher of preferring funding for a game species in subregion 4 (odds ratio = 1.77).

Figure V.B.4. Odds ratios of species use levels by subregion.



Tables A-62 to A-84 in Appendix A report the average importance and odds ratios for each individual state as well as the four subregions.

<u>Results for Alaska and Hawai`i</u>

Alaska and Hawai`i were not included in a subregion due to the unique nature of relevant wildlife species and species factor levels in those states. Instead, a separate survey version was administered in each state. Results for Alaska are reported in Table A-62, and results for Hawai`i are reported in Table A-66 in Appendix A. In Hawai'i, species origin (AI = 50.4), followed by species status (AI = 41.7), was the most important factor, while for Alaska species use (AI = 39.4) was the most important factor in preference for conservation funding. An examination of the impacts of different levels of the factors origin, status, and use (i.e., examination of odds ratios) revealed that, for both states, conservation funding support for declining species was more likely than for common species. Additionally, support was more likely for native species over nonnative species in both states. While support for game species over nongame species was clear in Alaska (odds ratio = 2.00), the likelihood that a game species would be preferred over a nongame species in Hawai`i was lower (odds ratio = 1.12).

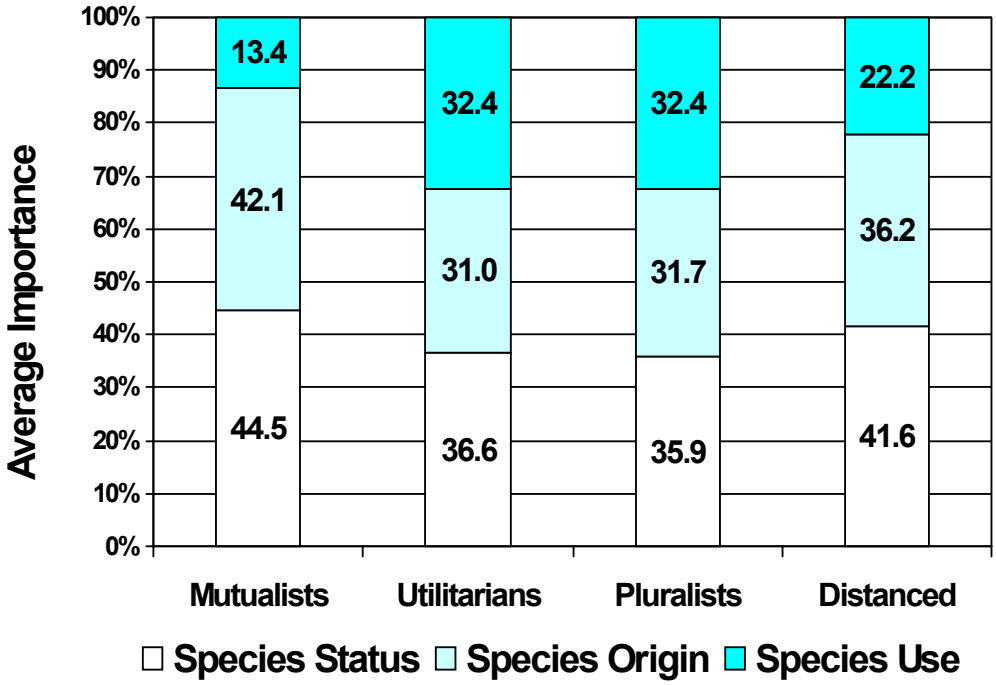
Wildlife Value Orientation Type

This section examines how the four wildlife value orientation types identified in this study (i.e., Utilitarians, Pluralists, Mutualists, and Distanced; see Section II) compared on the relative importance of wildlife species factors and the impacts of species factor levels on wildlife species choice. See Tables A-85 to A-88 in Appendix A for results reported by wildlife value orientation type.

RQ1. Which species factor is most important in influencing public preferences for funding the conservation of a species: species status, species origin, or species use?

Species status was the most important factor determining preference for conservation funding for all value orientation types (AI = 35.9 through 44.5) (Figure V.B.5). While species status was ranked first for Utilitarians and Pluralists, the relative importance of species origin and species use was very similar to the rank of species status for these two value orientation types. In contrast, the average importance of species use was quite low for both the Mutualists (AI = 13.4) and Distanced (AI = 22.2).

Figure V.B.5. Average importance of species factors by wildlife value orientation type.

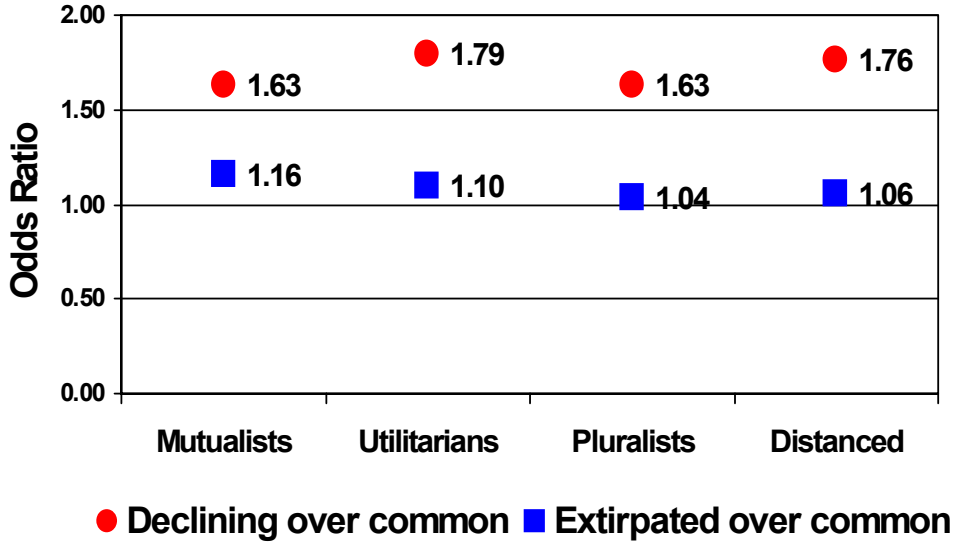


The value orientation types were compared on the likelihood of preferring a declining or extirpated species over a common species; native over nonnative; and game over nongame. Figures V.B.6, V.B.7, and V.B.8 present these results.

RQ2. What is the likelihood that an individual would prefer, for conservation funding, a common species versus a declining species versus an extirpated species? [species status]

A declining species was at least 1.6 times more likely to be supported for conservation funding than a common species (Figure V.B.6), taking into account origin and use. For Utilitarians and Distanced, the odds of declining over common species approached 1.8. While extirpated species were more likely to be supported for conservation funding than common species for all value orientation types, odds ratios for this comparison were much lower (odds ratios = 1.04 to 1.16).

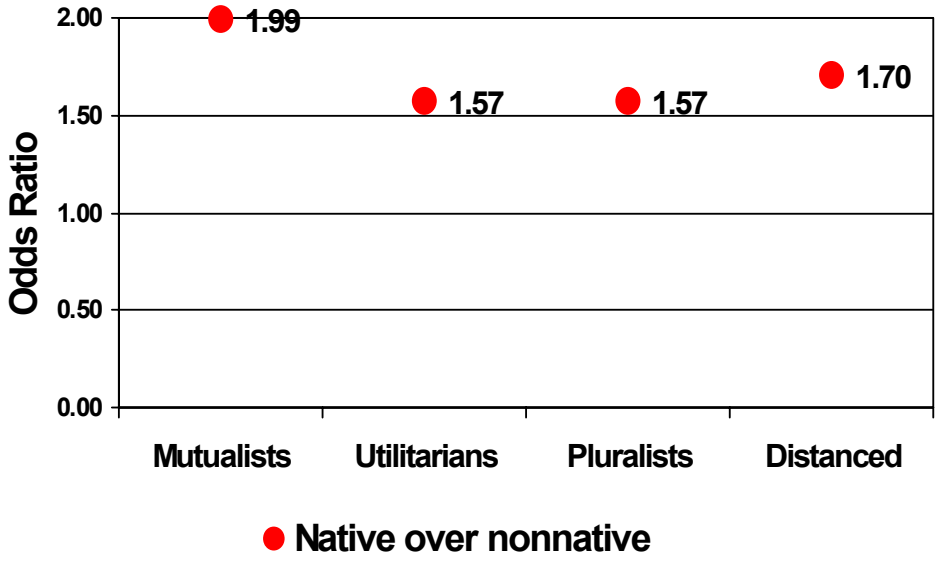
Figure V.B.6. Odds ratios of species status levels by wildlife value orientation type.



RQ3. What is the likelihood that an individual would prefer, for conservation funding, a native species versus a nonnative species? [species origin]

Controlling for species status and use, native species were more likely to be supported for conservation funding than nonnative species (odds ratios = 1.57 to 1.99) (Figure V.B.7). For Mutualists, the odds of preferring native over nonnative species approached 2.0.

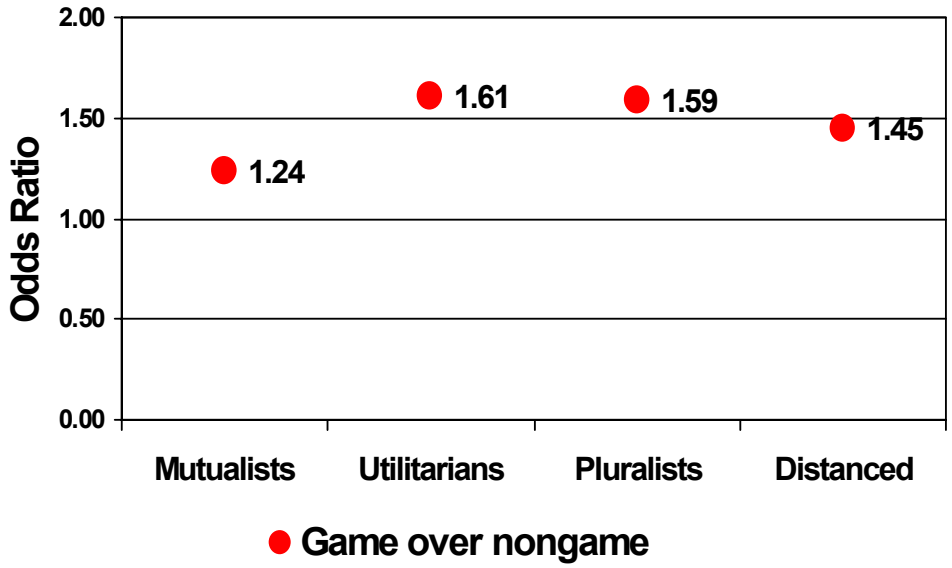
Figure V.B.7. Odds ratios of species origin levels by wildlife value orientation type.



RQ4. What is the likelihood that an individual would prefer, for conservation funding, a game species versus a nongame species? [species use]

The odds of preferring a game species over a nongame species was more than 1.4 times for Utilitarians, (odds ratio = 1.61), Pluralists (odds ratio = 1.59), and Distanced (odds ratio = 1.45) taking into account the effects of species status and origin (Figure V.B.8). While support for game over nongame species was positive for Mutualists, the odds of this support were less than for the other value orientation types (odds ratio = 1.24).

Figure V.B.8. Odds ratios of species use factors by wildlife value orientation type.



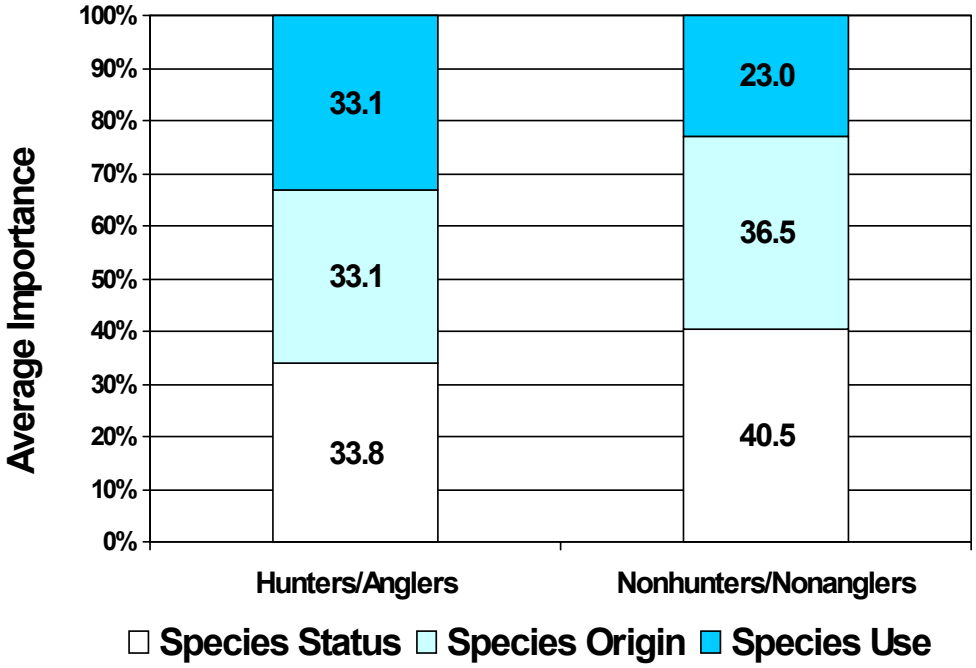
Hunters and Anglers versus Non-Hunters and Anglers

This section examines preferences for conservation funding compared between respondents who participated in hunting and/or fishing in the past 12 months and those who did not. See Tables A-89 and A-90 in Appendix A for results reported in this section.

RQ1. Which species factor is most important in influencing public preferences for funding the conservation of a species: species status, species origin, or species use?

All species factors had equal importance in influencing hunter/angler preferences for conservation funding (AI = 33.1 to 33.8) (Figure V.B.9). This pattern differs for non-hunters/anglers. Species status (AI = 40.5) and species origin (AI = 36.5) were the most important factors, respectively, while species use (AI = 23.0) was the least important factor determining preference for conservation funding for non-hunters/anglers.

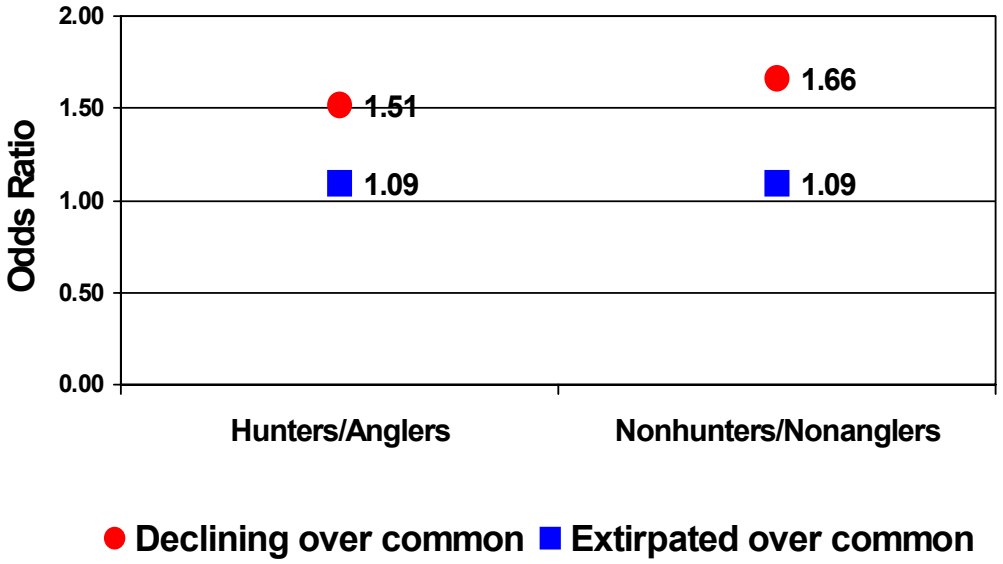
Figure V.B.9. Average importance of species factors for hunters/anglers and non-hunters/anglers.



RQ2. What is the likelihood that an individual would prefer, for conservation funding, a common species versus a declining species versus an extirpated species? [species status]

Declining and extirpated species were both more likely to be supported for conservation than common species (Figure V.B.10), taking into account the effects of species origin and use. While declining species were more than 1.5 times more likely to be supported than common species (odds ratio = 1.51 and 1.66 respectively), the odds that extirpated species would be selected over common, while greater than one (odds ratio = 1.09 and 1.09), were smaller.

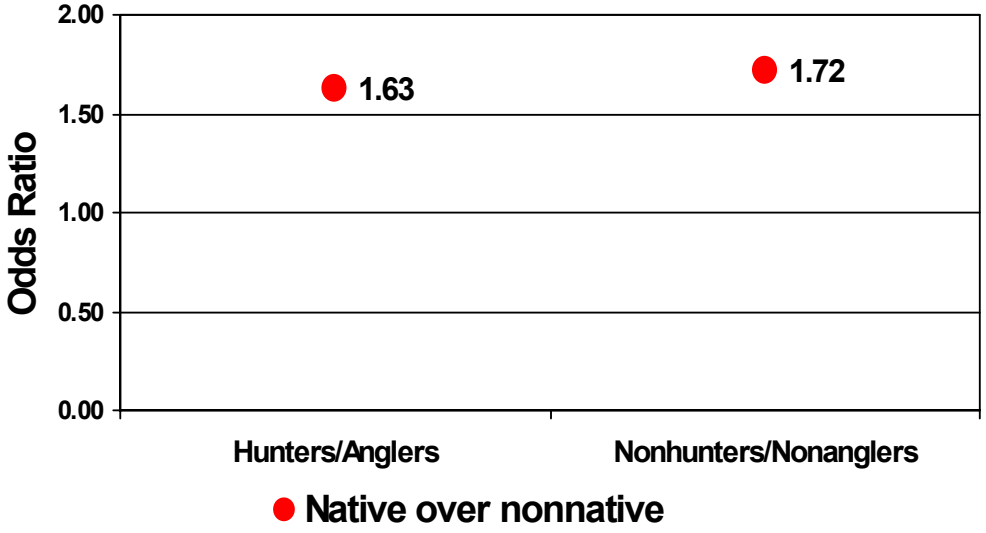
Figure V.B.10. Odds ratios of species status levels for hunters/anglers and non-hunters/anglers.



RQ3. What is the likelihood that an individual would prefer, for conservation funding, a native species versus a nonnative species? [species origin]

Figure V.B.11 presents odds ratios for native species preference over nonnative species. Native species were at least 1.5 times more likely to be preferred (odds ratio = 1.63 and 1.72) over nonnative, controlling for status and use.

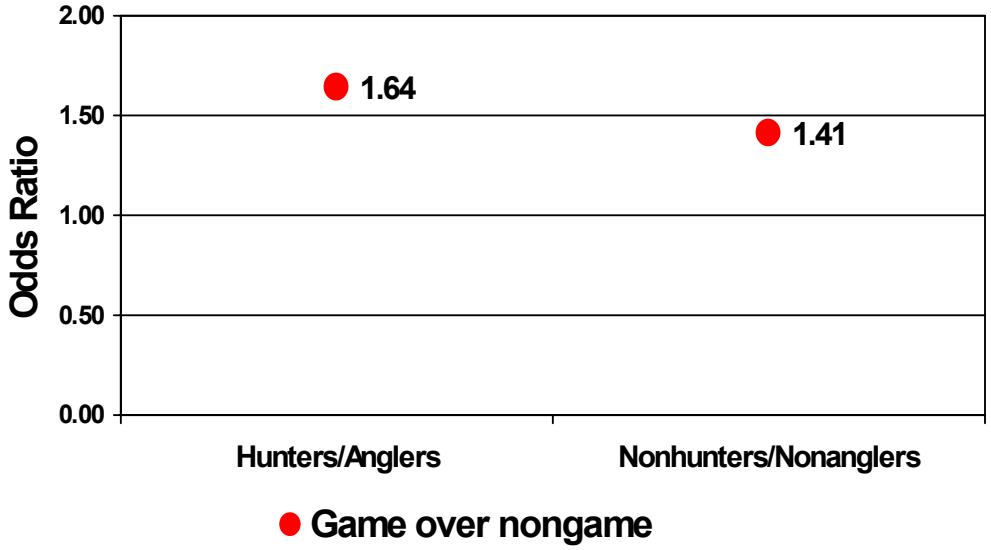
Figure V.B.11. Odds ratios of species origin levels for hunters/anglers and non-hunters/anglers.



RQ4. What is the likelihood that an individual would prefer, for conservation funding, a game species versus a nongame species? [species use]

The odds that hunters/anglers preferred game species were over 1.5 to 1 (odds ratio = 1.64) (Figure V.B.12) controlling for status and origin. While positive for non-hunters/anglers, the odds of supporting game species over nongame species were just under 1.5 (odds ratio = 1.41).

Figure V.B.12. Odds Ratios of species use levels for hunters/anglers and non-hunters/anglers.



C. SUMMARY OF FINDINGS AND CONCLUSIONS

We examined the relative effects of species factors and species factor levels on preferences for conservation funding for wildlife species across subregions in order to gain a sense for the universality of the prioritization of these characteristics across different parts of the West. In comparing the subregions, both similarities and differences came to light.

Prominent similarities across subregions were as follows:

1. For all subregions, both declining and extirpated species were more likely to be supported for conservation funding than were common species.

2. For all subregions, native species were more likely to be supported for conservation funding than were nonnative species.

3. For all subregions, game species were more likely to be supported for conservation funding than were nongame species.

There were also a number of differences found across subregions. These were:

1. The relative importance of the species factors differed across subregions.

    - The status of a species was the most important factor for subregions 2 (Kansas, Nebraska, Texas, and Oklahoma) and 3 (Montana, Wyoming, North Dakota, and South Dakota). On the other hand, the origin of a species was the most important factor for subregions 1 (California, Oregon, Washington, and Idaho) and 4 (Arizona, Colorado, New Mexico, Nevada, and Utah).

    - The status of a species was a significantly less important factor in subregion 4 (both in order and magnitude) than in the other 3 subregions.

    - Species use was a less important factor in subregions 1 and 2 (both in order and magnitude) than in subregions 3 and 4.

2. Examination of the odds ratios for declining and extirpated species compared to common species suggested that declining species were more likely to be supported for conservation funding than extirpated species in subregions 1, 2, and 4. However, it appears that in subregion 3, extirpated species may be more likely to receive public support for conservation funding than would declining species.

3. The likelihood that native species would be supported for conservation funding over nonnative species was much higher for subregions 1 and 4 than for subregions 2 and 3.

There are a number of factors that might contribute to differences that exist across subregions:

- The wildlife value orientation types described in the study; (Mutualists, Utilitarians, Pluralists, and Distanced) differed in how they viewed wildlife and wildlife management, and how they responded to these scenarios. Many of the states in the study were represented by different proportions of value orientation types. For example, in several states (e.g., Colorado, Nevada, and Oregon) Mutualists and Utilitarians represented similar proportions of the state population. On the other hand, states such as Montana, Wyoming, North Dakota, South Dakota, and Idaho had more Utilitarians than Mutualists. These differences were reflected in how different states and subregions responded to the three species factors. For example, species use was a much more important factor influencing preference for conservation funding for the Utilitarians and Pluralists than for the Mutualists. On the other hand, species status and origin were more important for Mutualists than for Utilitarians and Pluralists.

- Results also found that hunters/anglers responded differently to the scenarios than did non-hunters/anglers. As would be expected, the use of the species was a more important factor in influencing preferences for conservation funding for hunters/anglers. This is significant because the ratio of hunters/anglers to non-hunters/anglers differed a great deal across subregions. As an illustration, in subregion 1, between 11 and 34% of people were classified as hunters/anglers across

states, compared to a greater proportion (between 34 and 41%) found in subregion 3. These differences in participation rates across subregions may have influenced the differences in responses to scenarios.

- Because the subregions had different wildlife species representing the choices on the survey, some of the differences might suggest a "species" effect. Figures V.A.1, V.A.2, and V.A.3 allow for a comparison of what specific species were used for each scenario. Consider scenario 5; while all subregions highlighted the *same characteristics* in their comparisons (declining vs. extirpated; native vs. nonnative, and game vs. nongame), *different species* were used to illustrate these characteristics for each subregion. A species effect might be suggested if respondents from subregion 3 responded differently to the Mouflon Sheep than respondents in a different subregion to a species with the same characteristics, such as the Spottail Shiner in subregion 1. That is, preferences for conservation funding in the different subregions may have been partially due to other characteristics of the species (e.g., general "attractiveness") independent of the species' status, origin, or use.

- The context in which a species exists may vary across subregions. Therefore, people in one subregion may respond to management decisions about that species differently than people in another subregion. For example, in some states, the prevalence of human-bear conflict is high. Public response to management of bears in these states would likely be different than in states where, although bears exist, there are few reported interactions with humans.

The similarities across subregions provide managers with a good basis on which to make initial inferences about what kinds of species the public in their state might support or not support when developing policies and strategies for conservation. However, it is important to also take into account information about the specific species under consideration as some species may inherently evoke certain emotional and attitudinal responses. In addition, the differences that were found emphasize the notion that states may differ in their responses to wildlife species due to differences in characteristics of the public (e.g., wildlife value orientations and participation in wildlife-related recreation) and the context in which those species exist in a state. Thus, as in any process of wildlife decision-making, managers must consider the unique characteristics of their constituents and how those characteristics relate to wildlife management.

D. AN APPLICATION OF THE METHOD

We adapted a technology from research in consumer marketing and parks and protected area management that represents a practical application of the approach to predicting support for conservation funding for wildlife species described in this study. This technology takes the form of a *calculator* that estimates the proportion of a state's population that would support funding for a particular species given specific characteristics based on species status, species origin, and species use. The mathematical formulas within the calculator are based on the estimated coefficients (utility scores) derived from logistic regression analyses used to examine public preferences for wildlife species across the eight hypothetical scenarios as part of the "biodiversity section" of the survey. As a result, the information provided by the calculator takes

into account the odds that the public would support a species at one factor level (e.g., declining) over another (e.g., common) as well as the average importance of all the species factors (species status versus species origin versus species use).

The calculator presents two wildlife species for which the user is provided instructions to input three characteristics. An estimate of the percentage of the public that would support each species is then given based on those characteristics. Changing the characteristics within a specific species comparison will change the estimated percentages.

As an example, consider a situation where a wildlife manager is considering allocation of funds between the management of two wildlife species. One question he or she may have is "which species would the public prefer?" Species 1 is a declining wildlife species that is not native to the region and is a game species. Species 2 is also a declining species but is native to the area and is not a game species. The wildlife manager would input those characteristics into the calculator, which would then provide an estimate of public support for each species given a choice between the two. Example A in Table V.D.1 provides the results for this comparison. In this situation, species 1 would be supported for conservation funding by approximately 45% of the public, while species 2 would be supported by about 55%.

Now consider Example B where species 1 is a common species that is native to the state and is a game species. On the other hand, species 2 is a declining species, not native to the state, and is also a game species. In this scenario, approximately 60% of the public would support conservation funding for species 1 while almost 40% would support conservation funding for species 2. A calculator was created for and will be made available to each state that participated in the study.

Table V.D.1. Species of concern calculator.

Calculator – Example A

Species Factor	Input Level of Species Attribute: Species 1	Species 2
Species Status		
Level 1 This species is ***COMMON*** in the area and numbers are stable.		
Level 2 Numbers are ***LOW***; you don't see this species very often anymore.	2	2
Level 3 This species is ***NO LONGER PRESENT*** in the area.		
Species Origin		
Level 1 This species ***DOES NOT OCCUR NATURALLY i***n the area.		
Level 2 This species ***NATURALLY OCCURS*** in the area.	1	2
Species Use		
Level 1 This species is ***NOT HUNTED OR FISHED***.		
Level 2 This species ***IS HUNTED OR FISHED***.	2	1
Percent of Public Support for Conservation Program	**45.26**	**54.74**

Calculator – Example B

Species Factor	Input Level of Species Attribute: Species 1	Species 2
Species Status		
Level 1 This species is ***COMMON*** in the area and numbers are stable.		
Level 2 Numbers are ***LOW***; you don't see this species very often anymore.	1	2
Level 3 This species is ***NO LONGER PRESENT*** in the area.		
Species Origin		
Level 1 This species ***DOES NOT OCCUR NATURALLY i***n the area.		
Level 2 This species ***NATURALLY OCCURS*** in the area.	2	1
Species Use		
Level 1 This species is ***NOT HUNTED OR FISHED***.		
Level 2 This species ***IS HUNTED OR FISHED***.	2	2
Percent of Public Support for Conservation Program	**60.56**	**39.44**

REFERENCES

Louviere, J. J., Hensher, D. A., & Swait, J. D. (2003). *Stated choice methods: Analysis and application*. Cambridge, UK: Cambridge University Press.

SPSS, Inc. (2004). *SPSS Base 13.0 for Windows User's Guide*. Chicago, IL: SPSS, Inc.

Teel, T. L., Manfredo, M. J., Bright, A. D., & Dayer, A. A. (2004, January 30). *Contribution of human dimensions information to the development of state Comprehensive Wildlife Conservation Strategies.* Powerpoint presentation distributed to member states in the Western Association of Fish and Wildlife Agencies. Fort Collins, CO: Colorado State University, Human Dimensions in Natural Resources Unit.

SECTION VI. WILDLIFE-RELATED RECREATION

[RESULTS FOR STUDY OBJECTIVE 6]

This section highlights results regarding participation in wildlife-related recreation. It includes: 1) a summary of responses to regional issues by hunters/anglers and non-hunters/anglers, 2) latent demand for fishing, hunting, and viewing, 3) characteristics of latent demand groups, and 4) high investment wildlife viewing demand.

The survey items used to characterize wildlife-related recreation participants are below.

Section III.

We would like to learn about your fish- and wildlife-related recreation activities. *Please check your response (☑).*

1.	Have you ever participated in recreational (non-commercial) fishing?	❒ Yes	❒ No
2.	Did you participate in recreational (non-commercial) fishing during the past 12 months (1 year)?	❒ Yes	❒ No
3.	Have you ever participated in recreational (non-commercial) hunting?	❒ Yes	❒ No
4.	Did you participate in recreational (non-commercial) hunting during the past 12 months (1 year)?	❒ Yes	❒ No
5.	Have you ever taken any recreational trips for which fish or wildlife viewing was the primary purpose of the trip?	❒ Yes	❒ No
6.	Did you take any recreational trips in the past 12 months (1 year) for which fish or wildlife viewing was the primary purpose of the trip?	❒ Yes	❒ No

Please respond to the following 3 questions about your interest in participating in fish- and wildlife-related recreation in the future. *Circle one number for each statement.*

		Not at all Interested	Slightly Interested	Moderately Interested	Strongly Interested
1.	How interested are you in taking recreational fishing trips in the future?	1	2	3	4
2.	How interested are you in taking recreational hunting trips in the future?	1	2	3	4
3.	How interested are you in taking recreational trips in the future for which fish or wildlife viewing is the primary purpose of the trip?	1	2	3	4

See Tables A-91 to A-94 in the Appendix for a complete accounting of the responses to all of the recreation participation questions.

A. SUMMARY OF RESPONSES TO REGIONAL ISSUES BY HUNTERS & ANGLERS AND NON-HUNTERS & ANGLERS

This section provides a summary of the differences between current hunters/anglers and current non-hunters/anglers on responses to regional issues. Current hunters/anglers are defined as those who reported that they had participated in hunting, fishing, or both recreational activities in the past 12 months. Non-hunters/anglers are defined as those who did not report participation in hunting or fishing in the past 12 months.

The three regional issues included: 1) philosophy for serving and involving the public in wildlife management, 2) population level techniques to address growing human-wildlife conflict, and 3) managing for biodiversity and species of concern. For further information on these regional issues and how they were measured, see Sections IV and V.

A summary of findings is provided here. For complete tables comparing results by hunting and angling participation, see Tables A-95 to A-109 in the Appendix.

Philosophy for Serving and Involving the Public in Wildlife Management

Funding and programming approach. Respondents were first asked to select their perceived current approach. The modal response for both groups was the approach that *meets the needs of all members of the public and is funded by hunting and fishing licenses and public taxes* (Approach 4). Secondly, respondents were asked to select their desired approach. Again, the modal response for both groups was Approach 4. Compared to hunters/anglers, a higher percentage of non-hunters/anglers supported this approach. Hunters/anglers were more likely than non-hunters/anglers to believe the current approach *meets the needs of all members of the public and is almost entirely funded by hunting and fishing license*s (Approach 3). They were also more likely to desire Approaches 1 and 2 than non-hunters/anglers—both of which *primarily meet the needs of hunters/anglers*.

Public involvement philosophy. In most states, hunters/anglers were more likely than non-hunters/anglers to report that 1) they feel their opinions are heard, 2) their interests are adequately taken into account, 3) it will make a difference if they provide input, and 4) the agency makes a good effort to obtain input from the public. Non-hunters/anglers were more likely than hunters/anglers to agree that they do not have an interest in providing input to fish and wildlife decisions. The greatest disparity between hunters/anglers and non-hunters/anglers existed on this item. Furthermore, in most states, non-hunters/anglers were more likely to agree that they trust the agency to make good decisions without their input.

Trust in government. There was no consistent trend among the states in whether hunters/anglers were more or less trusting of the federal government, state government, or state fish and wildlife agency. In fact, in many cases, there was little difference between hunters/anglers and non-hunters/anglers on items that measured trust.

Population-Level Techniques to Address Growing Human-Wildlife Conflict

For the bear and deer situations, the greatest and most consistent difference between hunters/anglers and non-hunters/anglers was on the management action "provide more recreational hunting opportunities." Hunters/anglers were more accepting of this management action. Overall, wildlife value orientation type was much better than hunting and fishing participation at explaining differences in people's responses on acceptability of management actions (e.g., see Section III).

B. LATENT DEMAND FOR FISHING, HUNTING, & VIEWING

Latent demand refers to those people potentially interested in fishing, hunting, and viewing in the future but who are not current participants. There are two views on factors related to latent demand. First, latent demand may suggest potential for future participation that could be encouraged with recruitment. These people are expressing an interest but may be constrained from participation by lack of knowledge, access, and availability of species, etc. If participation is made more accessible or attractive to those expressing latent demand, they may be more likely to actually participate. The other view suggests that non-participation is a part of more basic social changes. Constraints might include lifestyle, work or family obligations, or lack of support for participation by friends or family and may not be irreversible. Hence, latent demand is actually a reflection of declining participation in a recreational activity. In cases where latent demand is characterized by a large proportion of people who participated in the activity in the past (see Section VI.C) these people may actually have deserted the activity although they still have some interest in it.

Results for Sections VI.B to VI.D are displayed using maps, allowing for comparison between states. For information on how to read these maps, see Appendix B.

Figures VI.B.1 to VI.B.6 display maps comparing latent demand and current participation for fishing, hunting, and viewing (also see Table A-110). The latent demand maps should be read as the percent of all respondents who expressed some level of interest (i.e., slightly, moderately, or strongly) in future participation but who did not participate in the past 12 months. Current participation in fishing, hunting, and viewing refers to those who participated in the past 12 months. This measure was used for weighting the data so the percent of current participants in each state corresponds with the *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation* (U.S. Department of the Interior & U.S. Department of Commerce, 2001; see Appendix E for more on weighting).

The current participation maps are displayed to provide a context in which latent demand may be better understood. Nearly all current participants express an interest in future participation. However, these individuals are not included in estimates of latent demand. They therefore reduce the magnitude of potential latent demand that could exist in a state. For example, if 60% of people in a state are current participants, there can only be a maximum of 40% of the population classified in the latent demand group. If one wanted to know what *could be* the potential participation in a state in the future if everyone who expressed an interest actually participated, one would add the percentages for a state on the current participation and latent demand maps. However, it is important to note that latent demand may not actually translate into future participation. Although they express an interest, individuals in this category may continue to be constrained from participation.

Summary of results. Overall, latent demand was the greatest for viewing, followed by fishing, and then hunting (except for Alaska where latent demand was nearly equivalent across the recreational activities). This trend was consistent with current participation in all states as well. For most of the states, latent demand was higher than current participation for all recreational

activities. All of the exceptions occurred in situations where current participation was expressed by over 40% of respondents.

Figures VI.B.1 and VI.B.2 display latent demand and current participation for recreational fishing. Despite the variability in current participation among states (e.g., Alaska [44.0%] compared to California [10.3%]), latent demand for fishing was at least 30% in all states. Figures VI.B.3 and VI.B.4 display latent demand and current participation for recreational hunting. Latent demand was at least 20% in all states. In some states the latent demand was only slightly greater in magnitude than the current participation (e.g., Montana), while in other states it was as much as fourteen times the current participation (e.g., California). Figures VI.B.5 and V.B.6 display latent demand and current participation for taking recreational trips with the primary purpose of wildlife viewing. The current participation for recreational viewing was the highest of the three types of wildlife-related recreation. Thus, in some states the magnitude of the latent demand was lower than the current participation (e.g., Alaska), while the sum total of current participation and latent demand was a very large portion of their respondents (e.g., nearly 90% in Alaska).

Figure VI.B.1. Latent demand for recreational fishing represented by percent of respondents expressing interest in future participation who did not participate in the past 12 months.

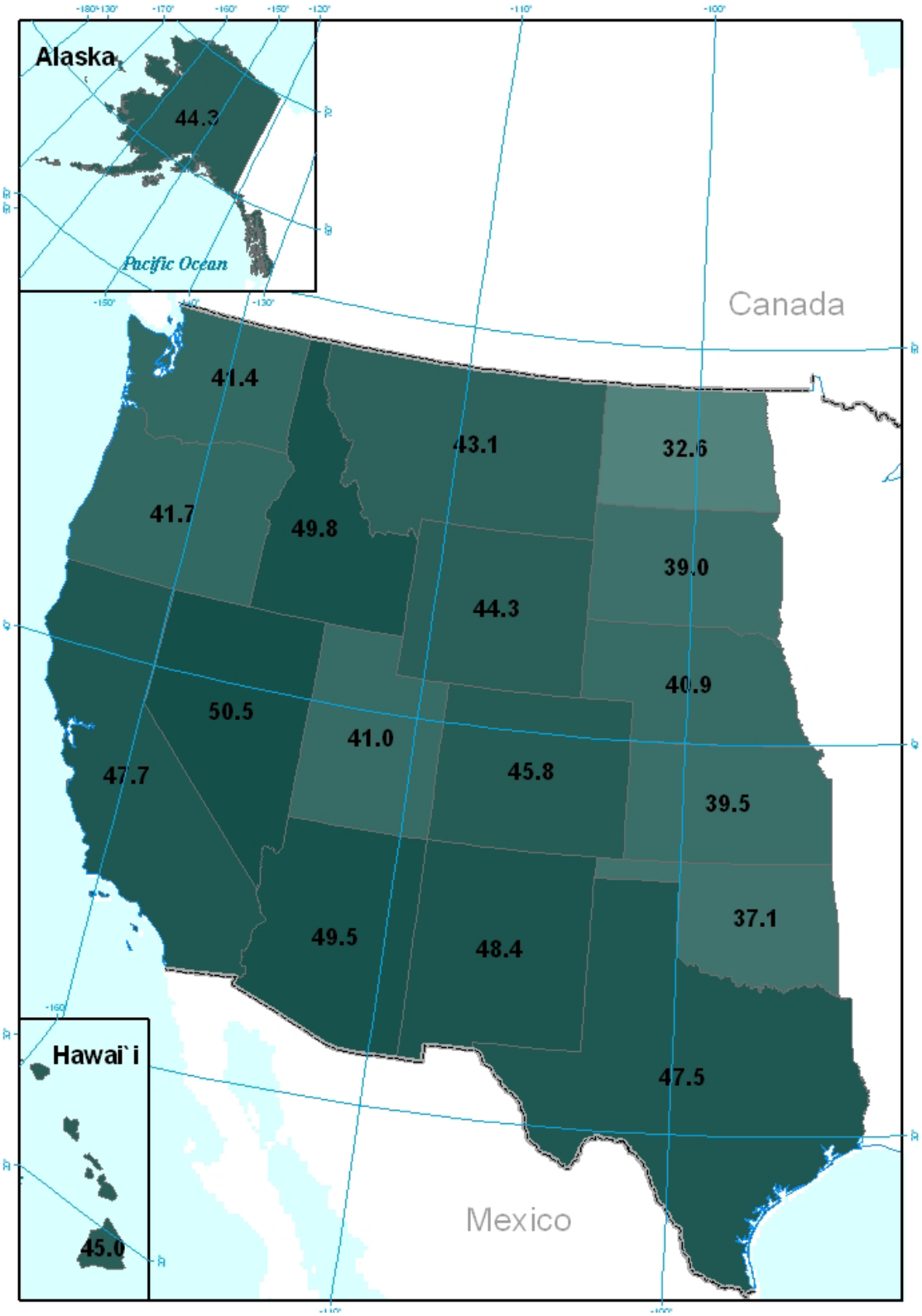


Figure VI.B.2. Percent of respondents who currently participate in recreational fishing.

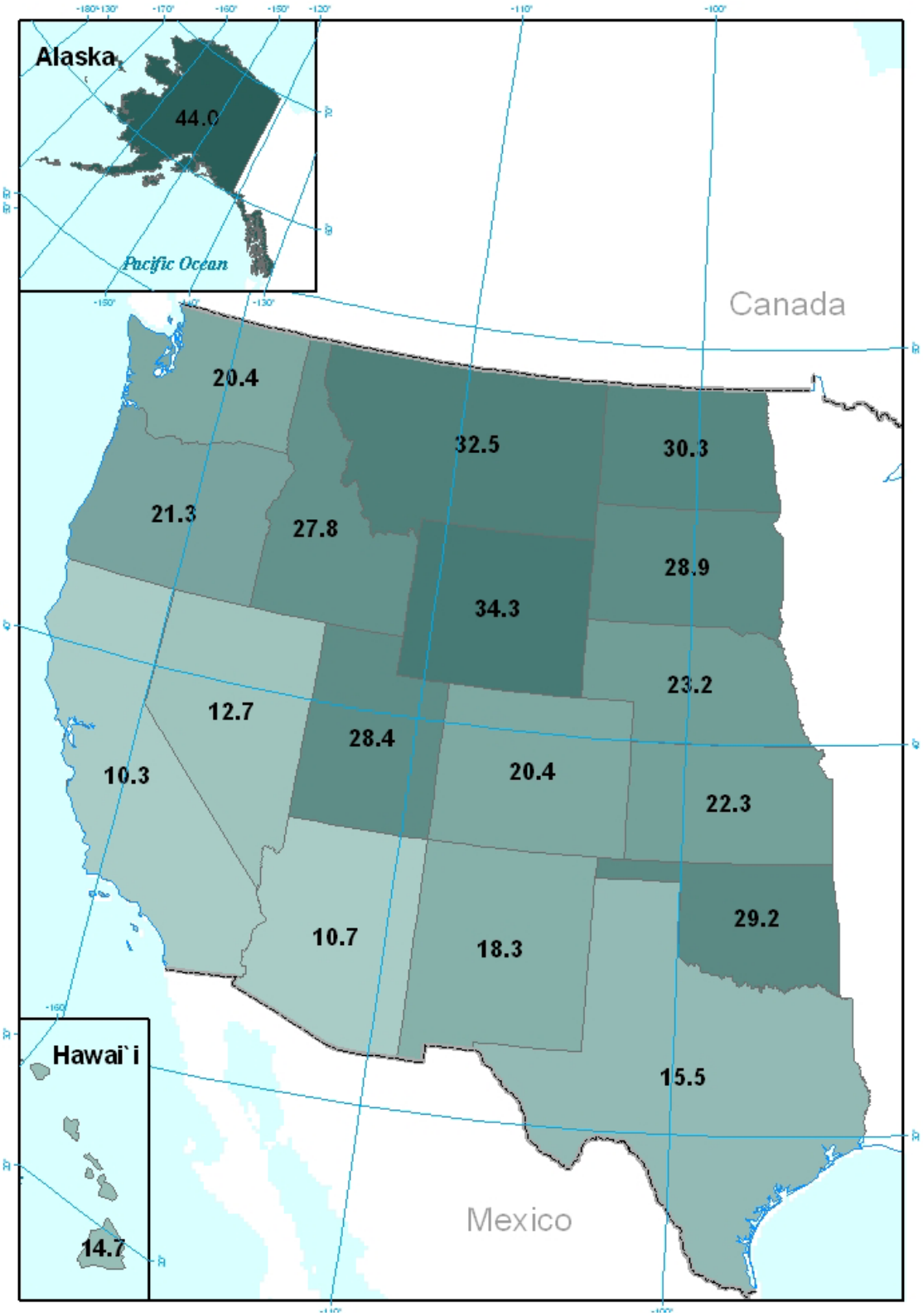


Figure VI.B.3. Latent demand for recreational hunting represented by percent of respondents expressing interest in future participation who did not participate in the past 12 months.

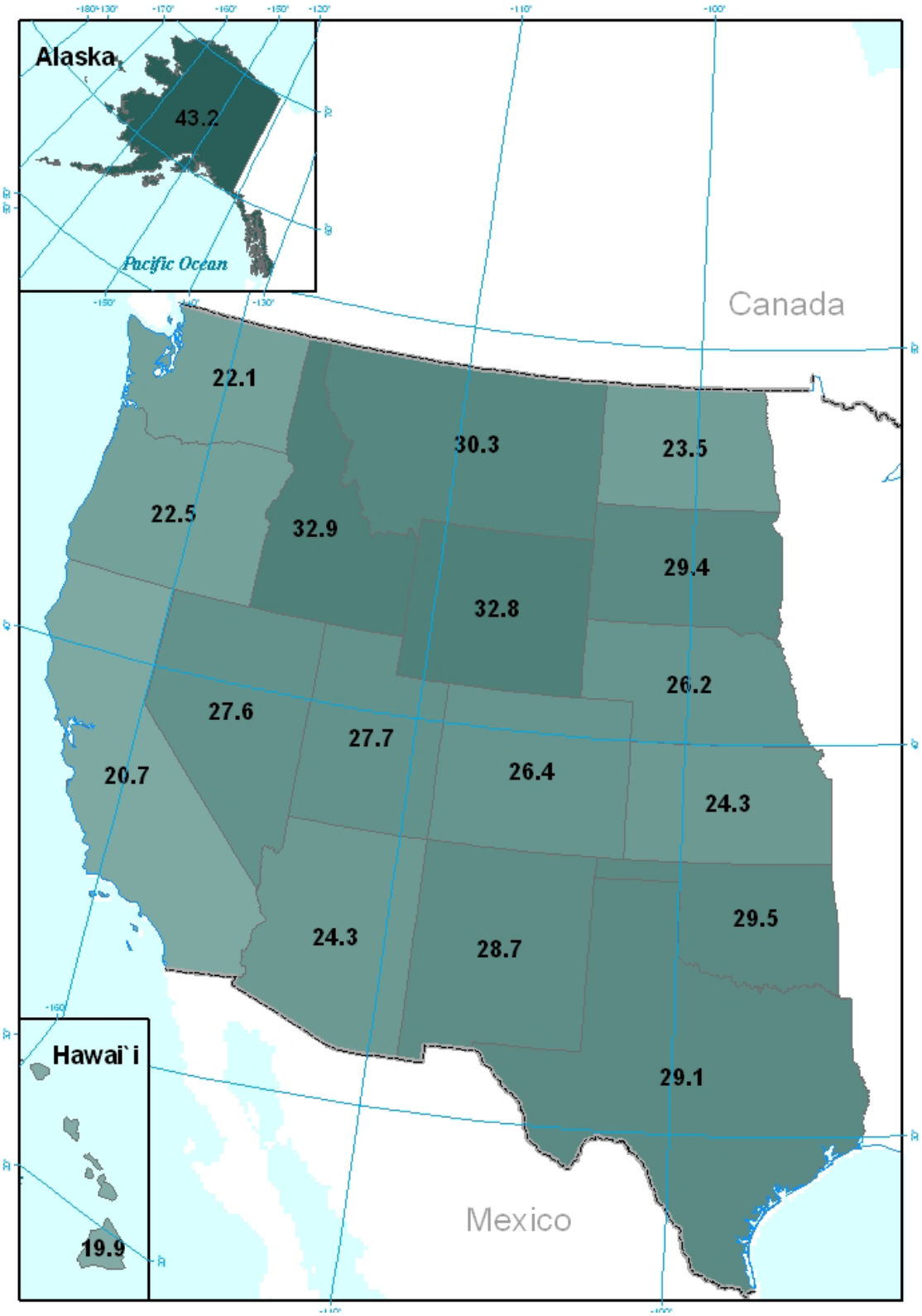


Figure VI.B.4. Percent of respondents who currently participate in recreational hunting.

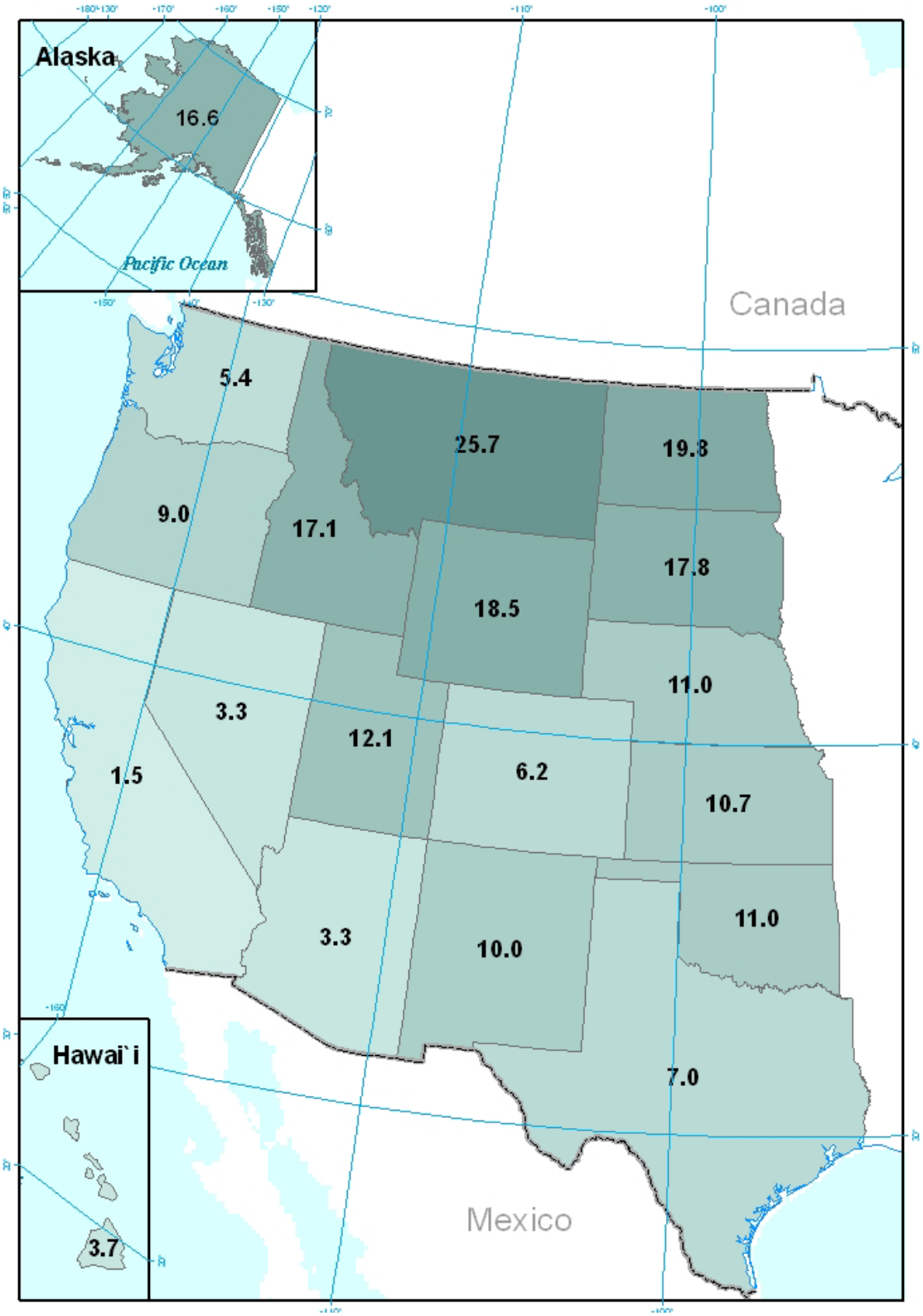


Figure VI.B.5. Latent demand for recreational trips for which fish or wildlife viewing was the primary purpose represented by percent of respondents expressing interest in future participation who did not participate in the past 12 months.

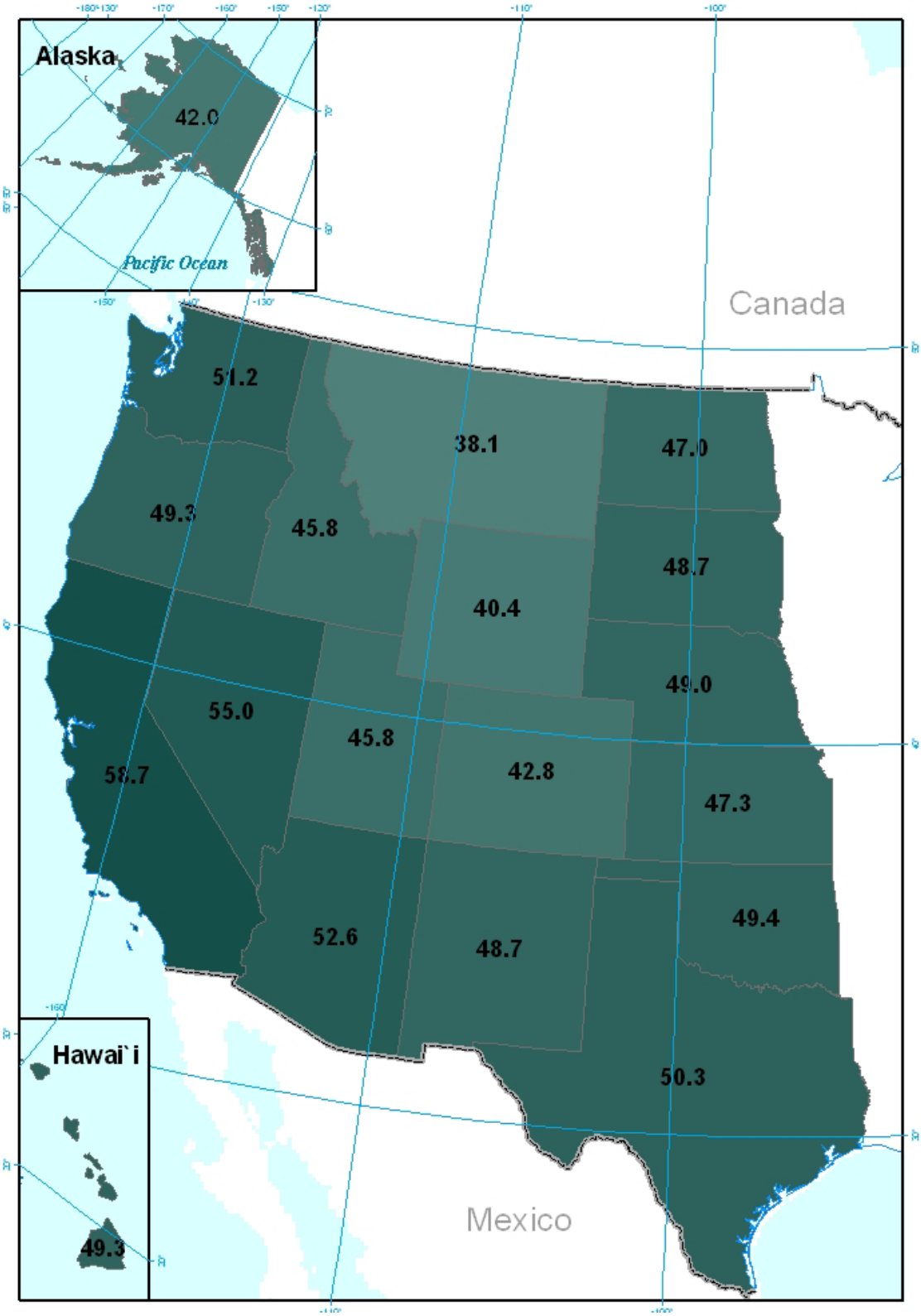
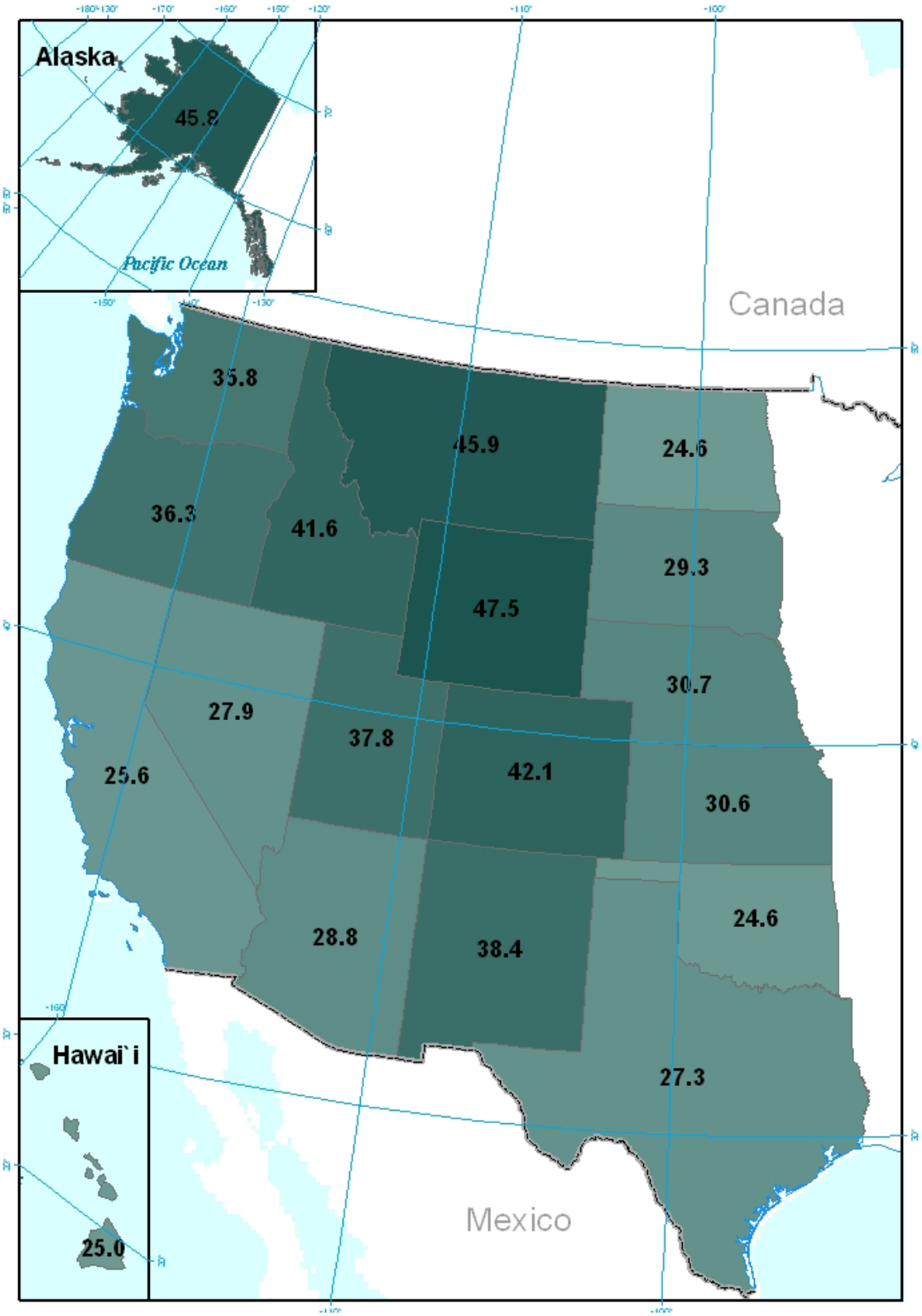


Figure VI.B.6. Percent of respondents who currently participate in recreational trips for which fish or wildlife viewing was the primary purpose.



C. CHARACTERISTICS OF LATENT DEMAND GROUPS

This section highlights characteristics of latent demand groups. For more information about latent demand see Section VI.B.

There is considerable variability in the characteristics of latent demand groups among the states. Characteristics of these people that are consistently found across most or all of the states are as follows:

1. Latent demand for fishing and hunting primarily came from those who have participated in the activity in the past. Latent demand for viewing was more evenly distributed between those who have participated in the past and those who have not.

2. Females composed a larger proportion of latent demand groups than current participant groups for fishing and hunting. The trend varied for viewing by state.

A complete listing of the socio-demographic characteristics of latent demand groups as compared to current demand groups by state is found in Tables A-111 to A-145 in the Appendix.

<u>Past Participation</u>

Latent demand for fishing and hunting primarily came from those who have participated in the activity in the past. Latent demand for viewing was more evenly distributed between those who have participated in the past and those who have not.

Figures VI.C.1 to VI.C.3 display percent of latent demand from past participants. The majority of latent demand for fishing came from past participants in fishing. This trend was consistent in all states, ranging from the lowest in California (82.5%) to the highest in Idaho (94.1%). Likewise, the majority of latent demand for hunting came from past participants in hunting. Yet, this trend was to a smaller degree than with fishing, ranging from the lowest in Hawai`i (46.0%) to the highest in Montana (80.5%). For taking recreational trips to view wildlife, approximately half of the latent demand came from past participants in viewing. The states ranged from the lowest in Kansas (40.8%) to the highest in Oregon (58.7%).

This trend of a large portion of fishing and hunting latent demand coming from past participants is likely due in part to the latent demand categorization capturing those who have effectively dropped out of the sport. Those who have not participated in years, and have, in reality, deserted the recreational activity may still express latent demand.

See Table A-146 in Appendix A for past participation results for all states.

Figure VI.C.1. Percent of past participants within latent demand for fishing group.

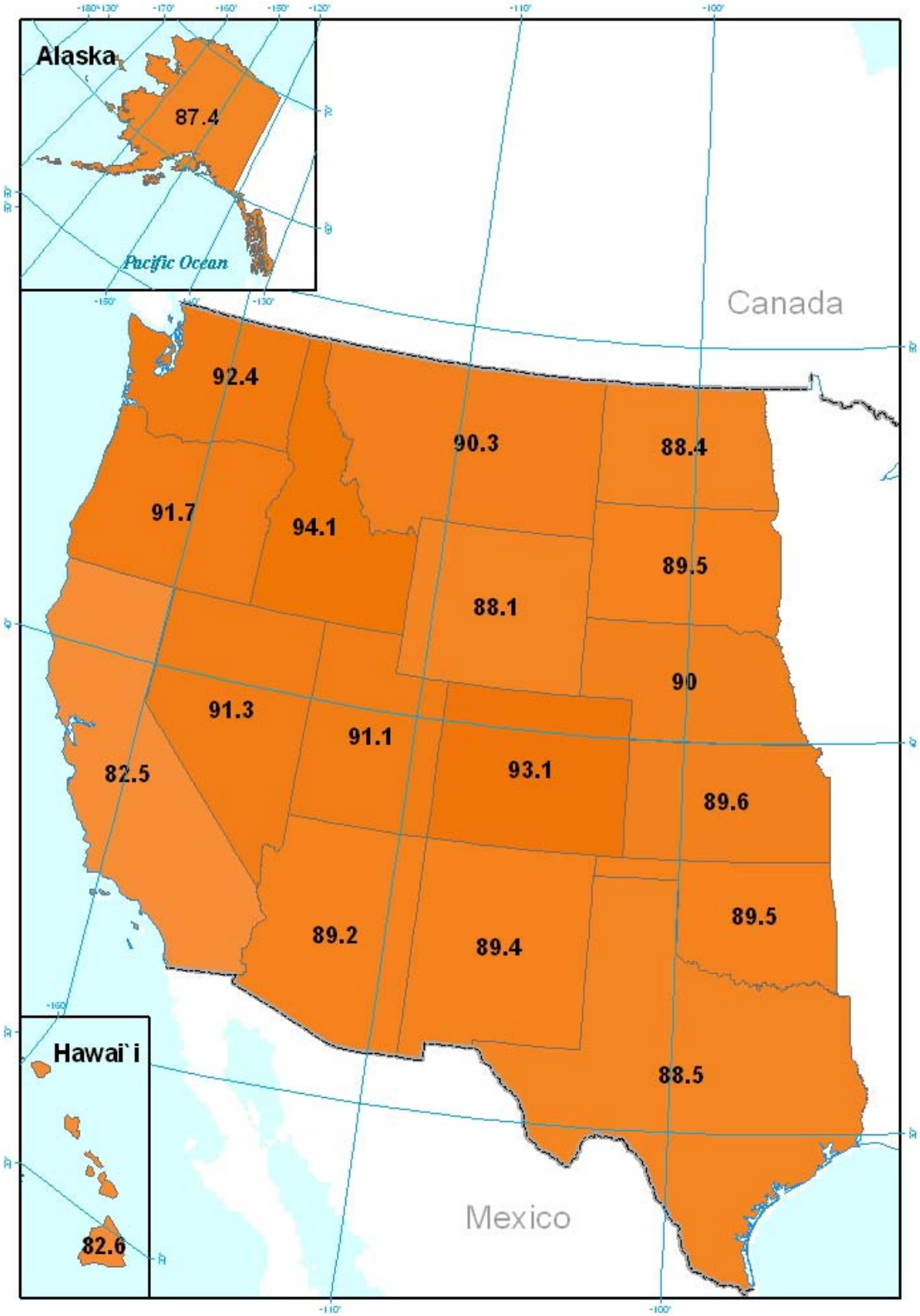


Figure VI.C.2. Percent of past participants within latent demand for hunting group.

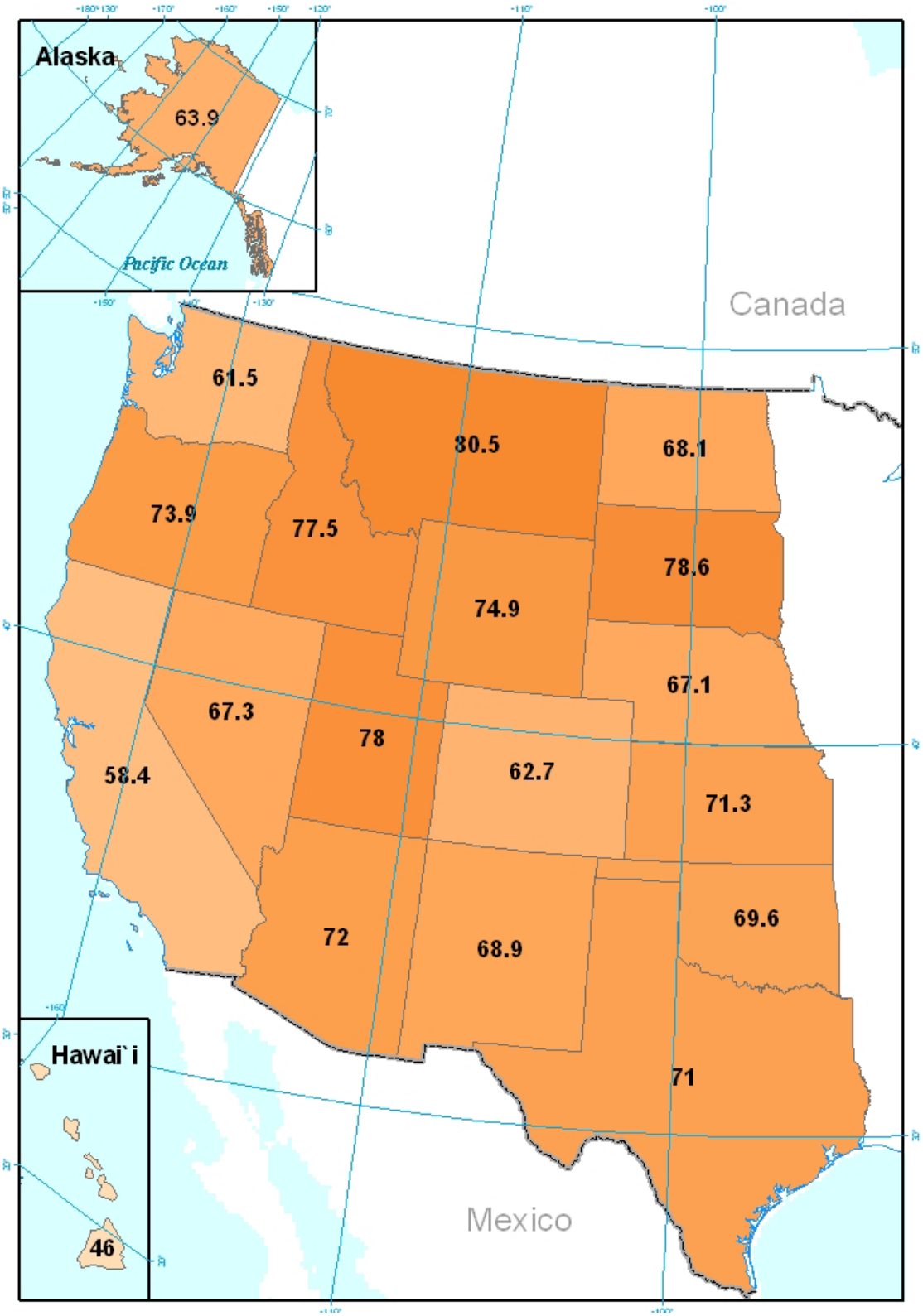
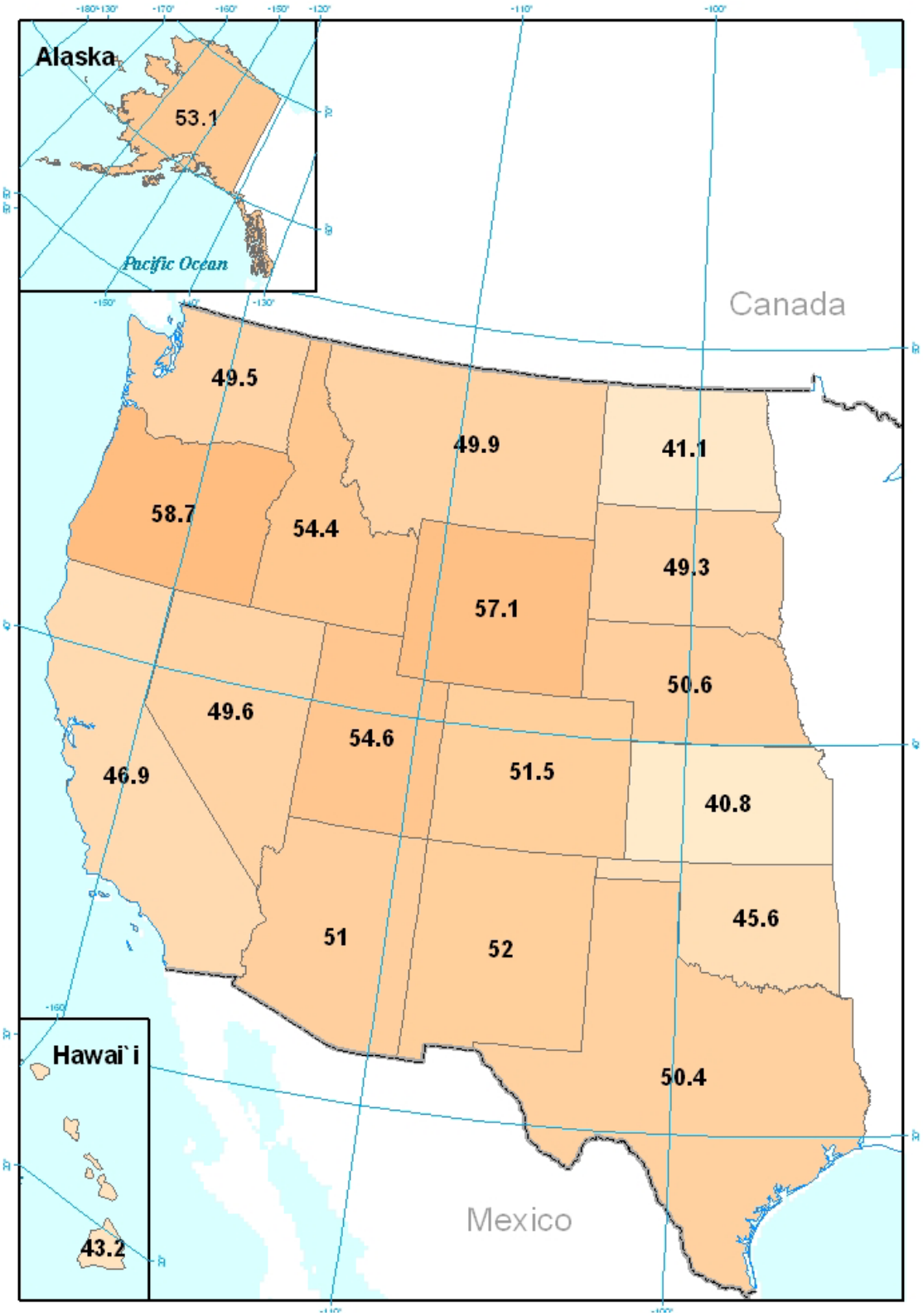


Figure VI.C.3. Percent of past participants within latent demand for wildlife viewing group.



Gender

Females composed a larger proportion of latent demand groups than current participant groups for fishing and hunting. The trend varied for viewing by state.

Figures VI.C.4 to VI.C.9 compare the gender distribution of latent demand groups and current participant groups for fishing, hunting, and viewing. The maps show the percent of the given group that is male. Thus, if the percent is over 50%, more males characterized the recreational activity group than females. If the percent is under 50%, more females characterized the recreational activity group than males.

As shown in Figures VI.C.4 and VI.C.5, approximately half of the latent demand for fishing came from females. In contrast, a larger majority of current participants in fishing in each state were male. Similarly, latent demand for hunting included a higher proportion of females as compared to current participation (except for Hawai`i; see Figures VI.C.6 and VI.C.7). In some states the difference was more pronounced than in others. As shown in Figures VI.C.8 and VI.C.9, this trend did not hold for viewing across states. In fact, in some states, latent demand included a larger proportion of males than females. In general, there was approximately equal distribution of males and females in latent demand and current participant groups for viewing in most states.

Figure VI.C.4. Percent of males within latent demand for fishing group.

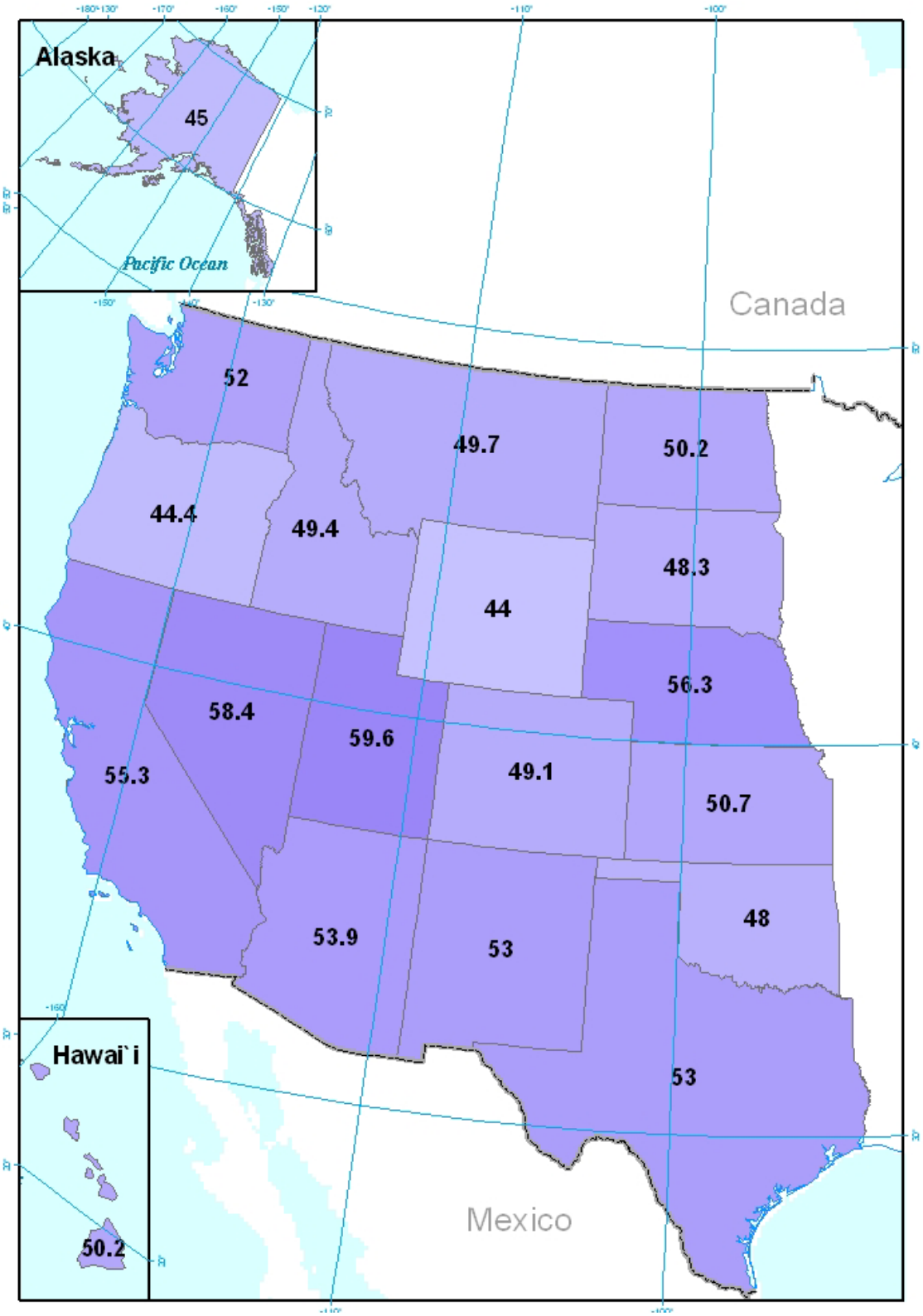


Figure VI.C.5. Percent of males within fishing current participation group.

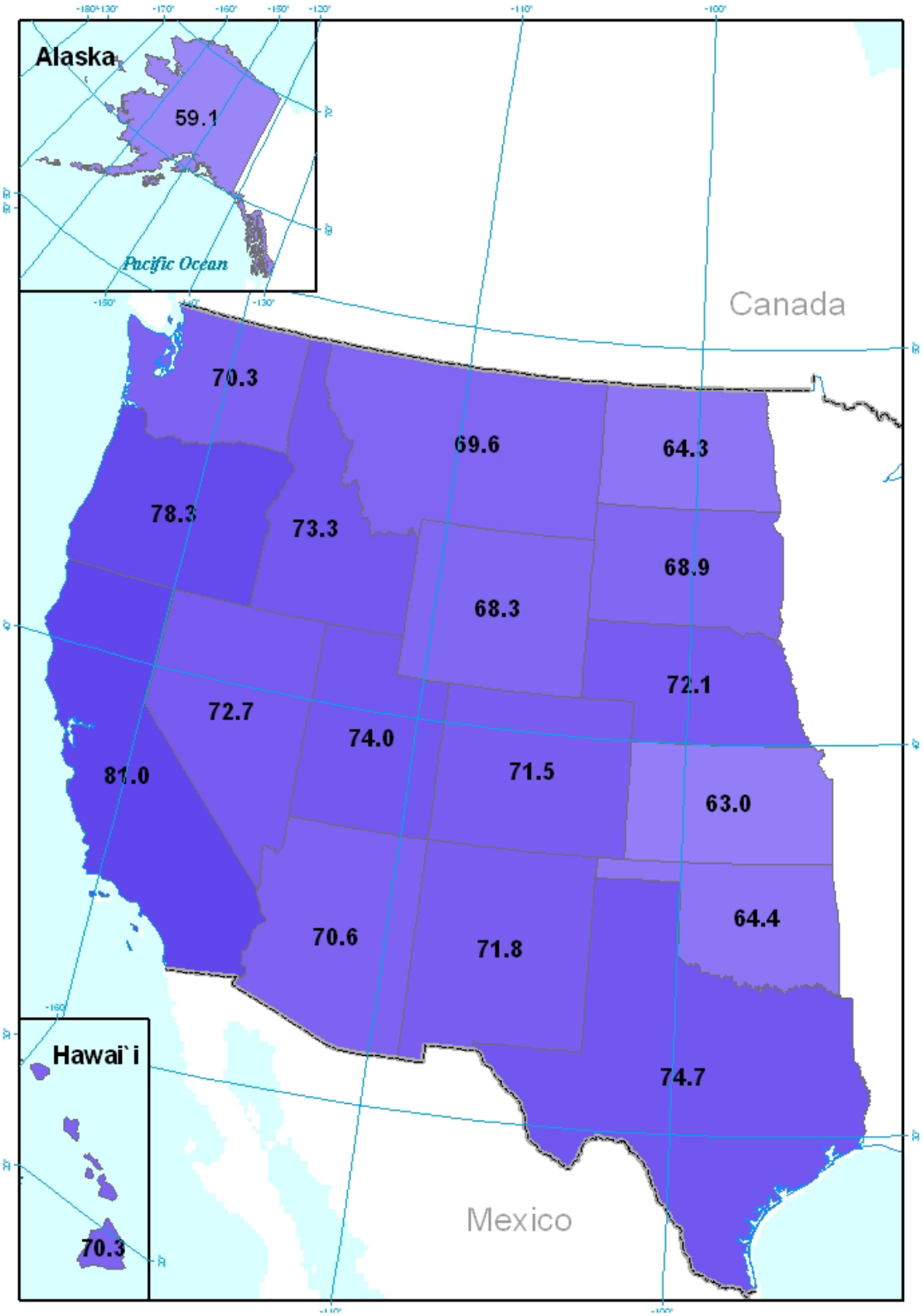


Figure VI.C.6. Percent of males within latent demand for hunting group.

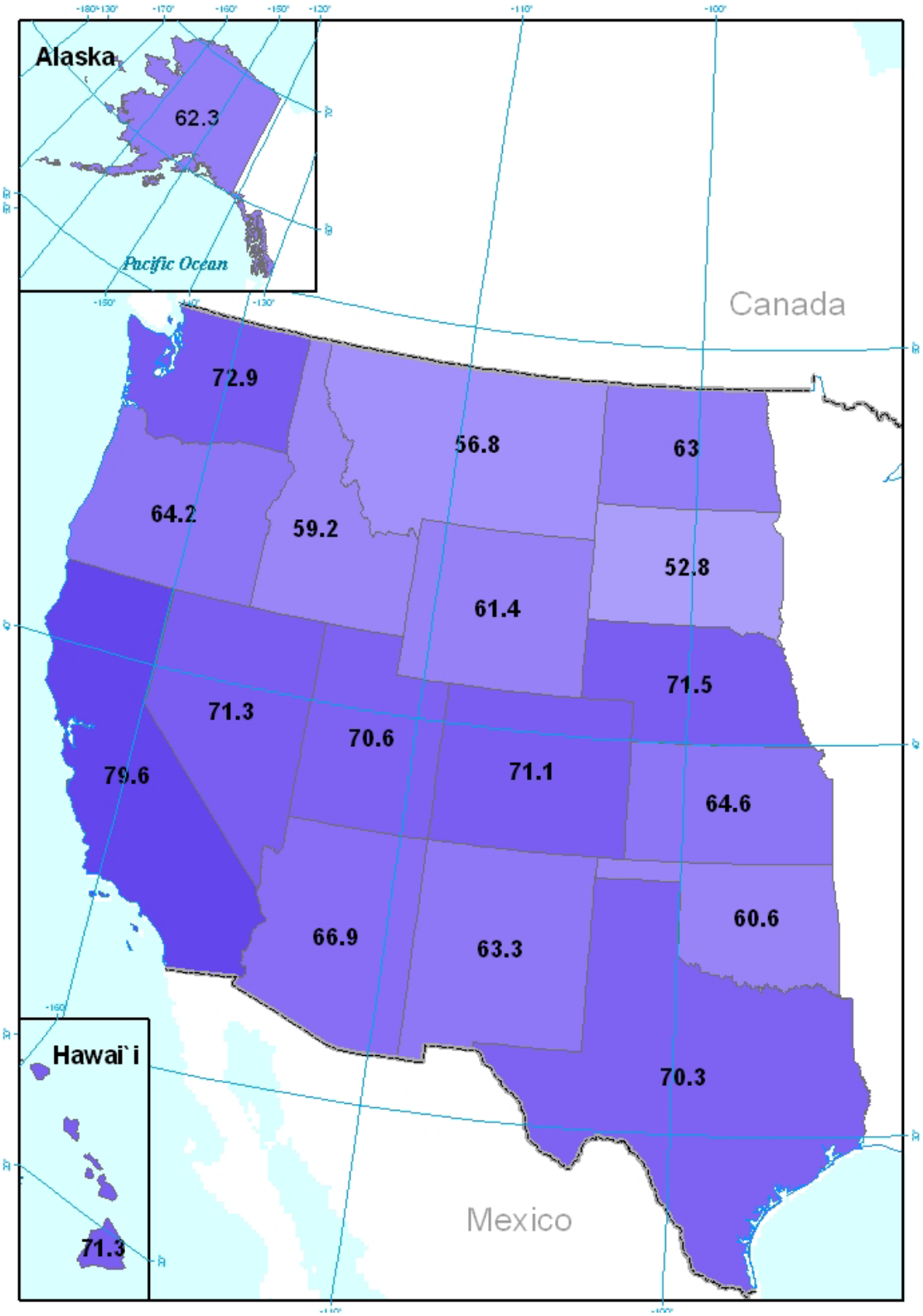


Figure VI.C.7. Percent of males within hunting current participation group.

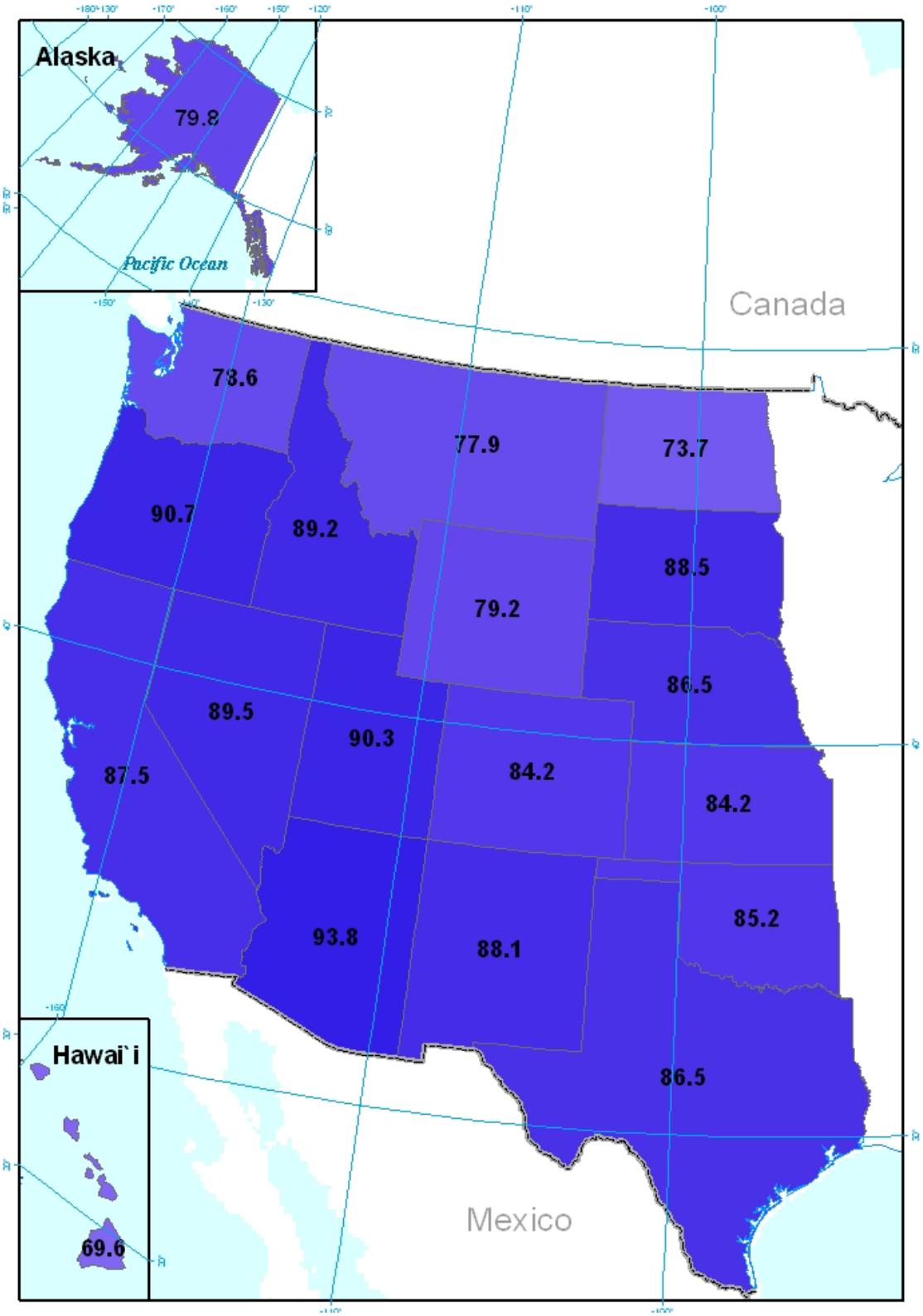


Figure VI.C.8. Percent of males within latent demand for wildlife viewing group.

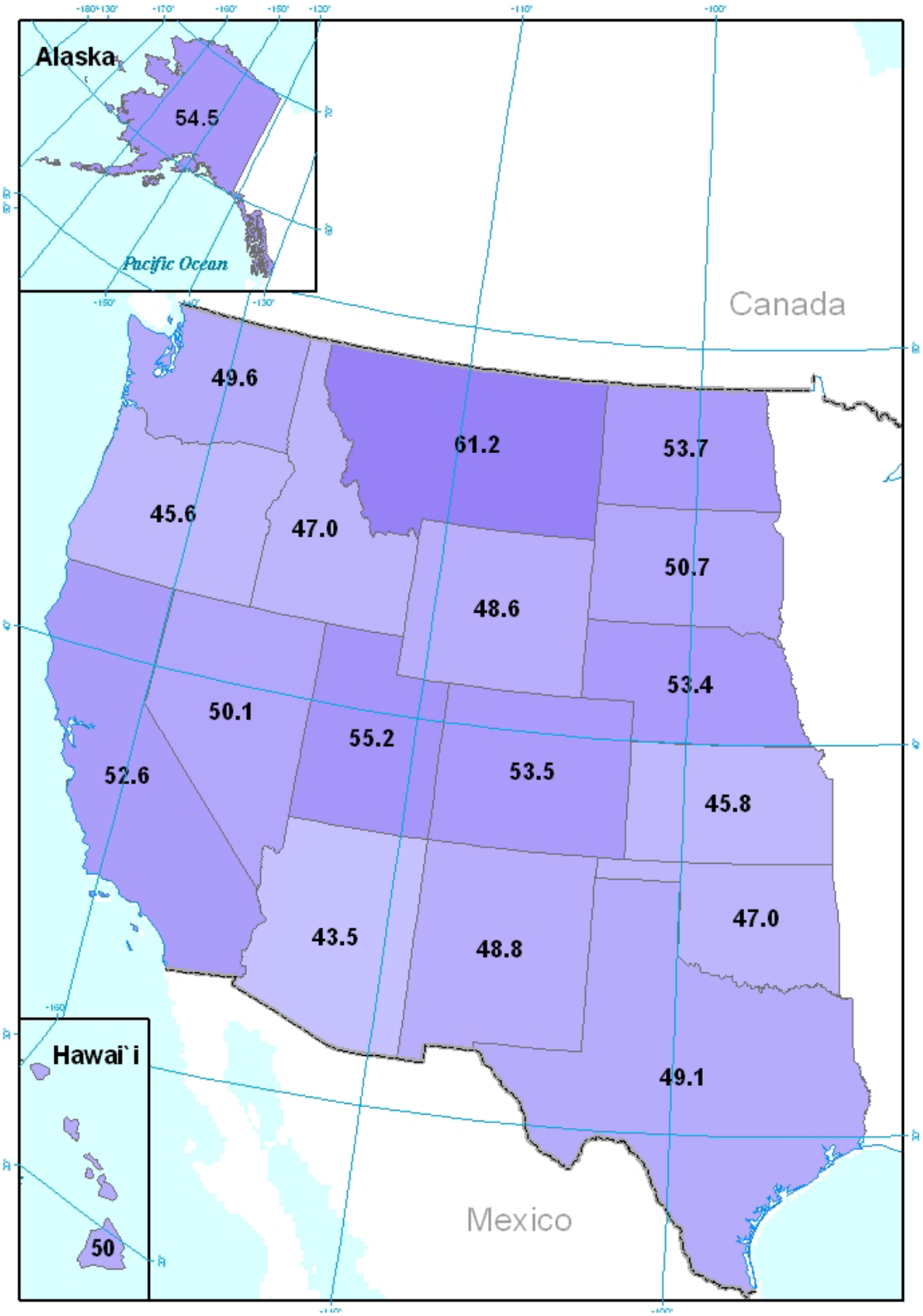
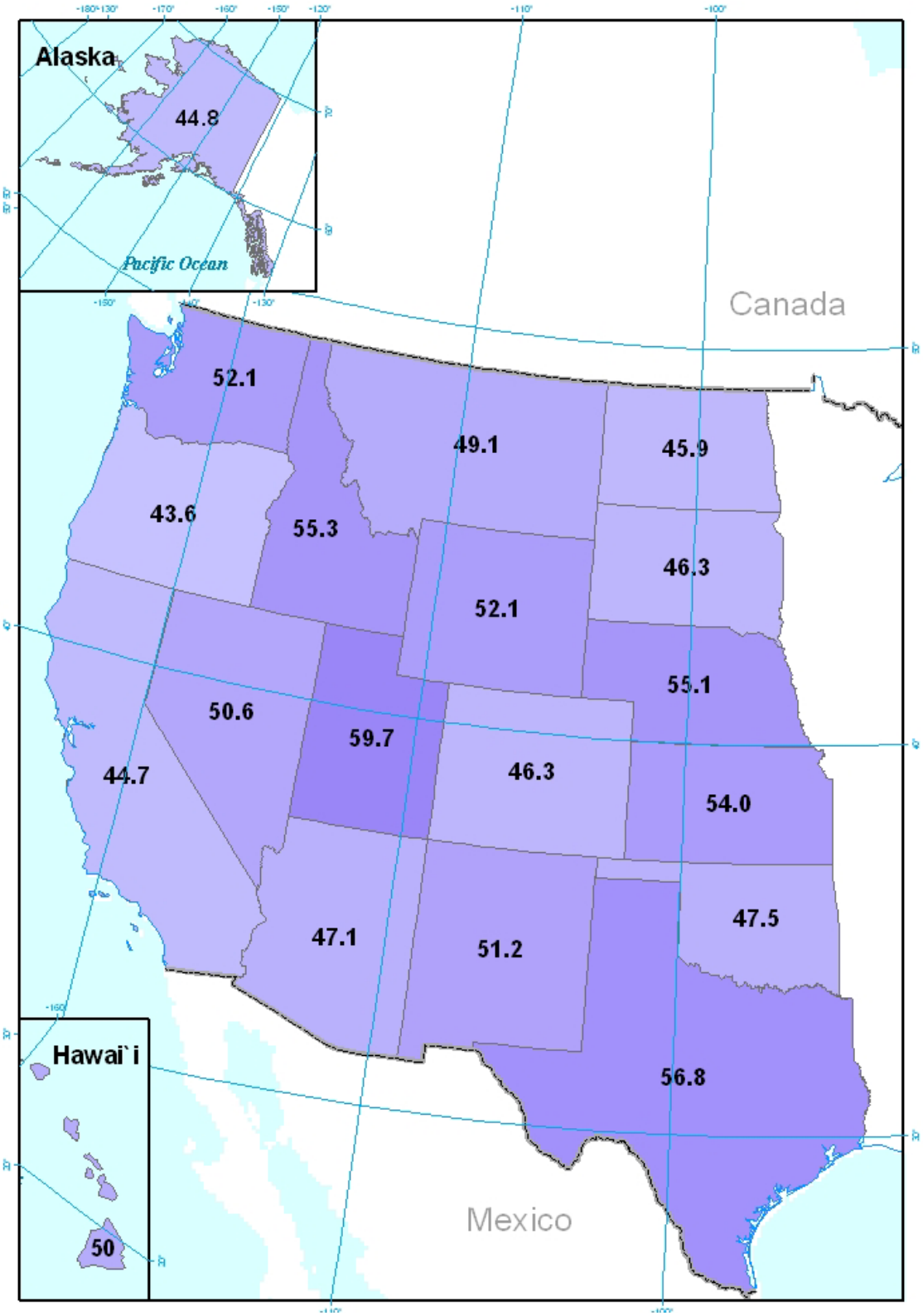


Figure VI.C.9. Percent of males within wildlife viewing current participation group.



D. DEMAND FOR HIGH INVESTMENT VIEWING TRIPS

This section explores interest in high investment wildlife viewing trips. Special destination viewing is often overlooked in assessments of wildlife viewing; yet, it contributes a sizeable amount to total wildlife viewing revenue. Respondents' level of interest in such trips domestically and internationally was examined. Well-known destinations for excellence in wildlife viewing were used: safari in Africa and remote area in Alaska. The items are shown below.

Now we would like to know more about your interest in taking specific trips to view wildlife.

How likely is it that you would consider taking one of the following trips in the future? *Circle one number for each statement.*

	Not at all Likely	Slightly Likely	Moderately Likely	Extremely Likely
1. ... a trip to Africa to go on a safari to view wildlife?	1	2	3	4
2. ... a trip to a remote area of Alaska to view wildlife?	1	2	3	4

Figures VI.D.1 and VI.D.2 display the percent of respondents who would be "extremely likely" to consider taking each of the wildlife viewing trips (also see Tables A-147 and A-148). Considering only those respondents who selected "extremely likely" allows for the most realistic assessment of what the potential investment may be.

Summary of results. In all states 20% to 30% of respondents would be extremely likely to consider taking a trip to a remote area of Alaska (except Alaska, 40%). In contrast, only 8% to 21% of respondents would be extremely likely to consider taking a trip to Africa to go on a safari.

Figure VI.D.1. Percent of respondents *extremely* likely to consider taking a trip to Africa to go on a safari to view wildlife in the future.

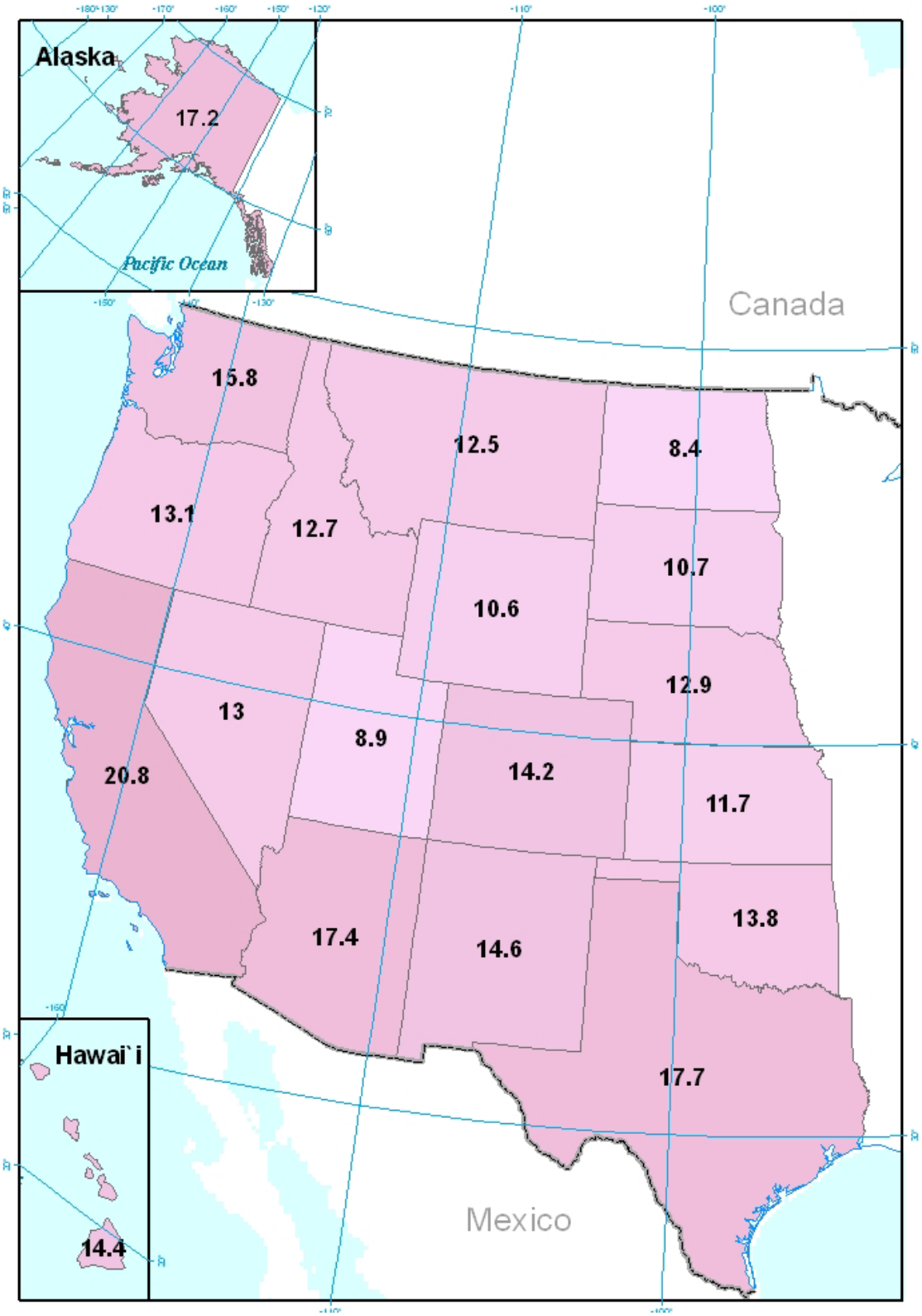
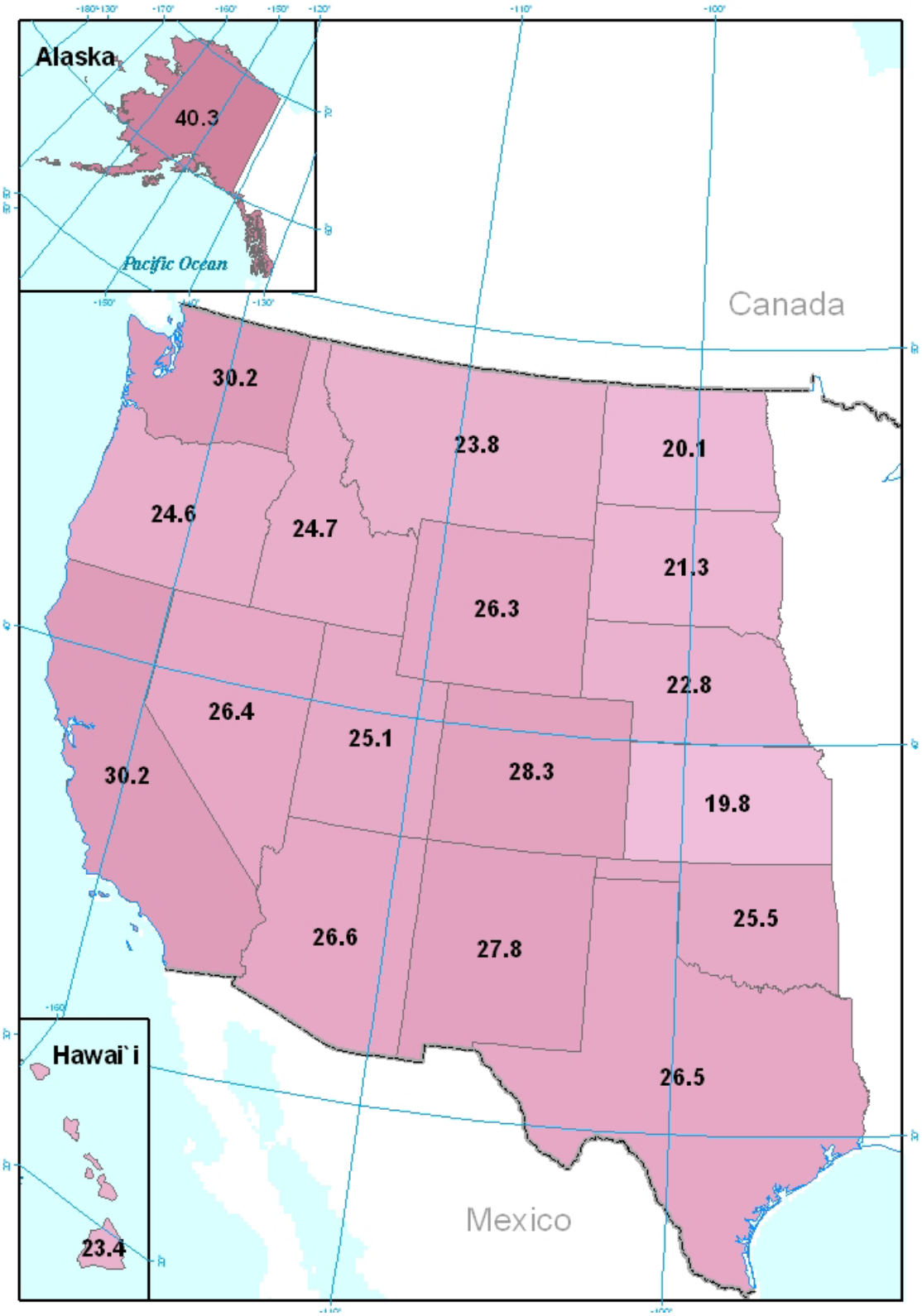


Figure VI.D.2. Percent of respondents *extremely* likely to consider taking a trip to a remote area of Alaska to view wildlife in the future.



REFERENCES

U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce, U.S. Census Bureau. (2001). *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*. Washington, DC: U.S. Department of the Interior.

APPENDIX A. SUPPORTING TABLES

Table A-1. Respondent gender by wildlife value orientation type represented by percentages.

Value Types	Male	Female
Utilitarian	64.9	35.1
Pluralist	62.8	37.2
Mutualist	31.2	68.8
Distanced	45.4	54.6

Table A-2. Respondent average age by wildlife value orientation type represented by percentages.

Value Types	Mean	Standard Deviation
Utilitarian	47.21	16.70
Pluralist	50.49	17.71
Mutualist	43.84	15.33
Distanced	42.66	17.15

Table A-3. Respondent highest level of education attained by wildlife value orientation type represented by percentages.

Value Types	Less than high school diploma	High School diploma or GED	2 year associate degree or trade school	4 year college degree	Advanced degree
Utilitarian	1.5	22.3	20.8	30.7	24.7
Pluralist	2.8	27.5	22.2	29.1	18.5
Mutualist	1.3	17.8	20.4	33.6	26.9
Distanced	1.3	20.2	14.7	29.8	34.0

Table A-4. Respondent income by wildlife value orientation type represented by percentages.

Value Types	Less than $10,000	$10,000-29,999	$30,000-49,999	$50,000-69,999	$70,000-89,999	$90,000-109,999	$110,000-129,999	$130,000-149,999	$150,000 or more
Utilitarian	3.3	14.9	19.9	20.1	15.6	9.8	5.0	3.4	7.9
Pluralist	2.3	16.0	26.2	20.6	12.9	10.2	3.7	2.0	6.1
Mutualist	2.3	19.3	24.2	16.7	13.7	8.4	5.1	2.5	7.9
Distanced	3.4	17.7	24.5	15.6	7.9	14.8	4.4	2.9	8.8

Table A-5. Respondent average length of residency in years by wildlife value orientation type represented by percentages.

Value Types	Mean	Standard Deviation
Utilitarian	30.33	20.70
Pluralist	32.45	20.68
Mutualist	25.98	18.27
Distanced	23.50	20.01

Table A-6. Respondent size of current residence by wildlife value orientation type represented by percentages.

Value Types	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Utilitarian	33.8	13.1	13.6	11.4	10.1	6.0	5.5	6.5
Pluralist	33.2	14.6	14.9	11.0	8.2	6.6	5.3	6.3
Mutualist	43.9	15.3	12.5	10.1	7.3	5.1	2.6	3.2
Distanced	42.2	16.3	16.6	11.6	4.8	3.6	3.4	1.5

Table A-7. Respondent size of childhood residence by wildlife value orientation type represented by percentages.

Value Types	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Utilitarian	23.5	10.1	10.5	11.5	10.6	7.3	11.7	14.8
Pluralist	25.1	9.9	13.0	10.9	9.3	7.8	11.3	12.6
Mutualist	30.6	14.3	12.7	11.6	9.3	6.7	7.2	7.5
Distanced	33.5	12.4	12.1	10.3	15.6	5.8	4.9	5.4

Table A-8. Percent of wildlife value orientation type classified as scoring high on the basic belief dimensions.

Value Types	Concern for Safety	Attraction
Utilitarian	11.1	66.6
Pluralist	11.0	79.9
Mutualist	8.5	85.3
Distanced	14.6	55.7

Table A-9. Percent of wildlife value orientation type indicating participation in wildlife-related recreation.

Value Types	Fishing ever	Fishing in the last 12 months	Hunting ever	Hunting in the last 12 months	Wildlife viewing ever	Wildlife viewing in the last 12 months
Utilitarian	85.3	21.9	50.4	9.7	52.0	24.2
Pluralist	84.0	22.4	51.4	9.9	59.7	30.3
Mutualist	74.8	9.2	16.1	0.8	62.8	37.5
Distanced	69.8	8.7	17.5	1.3	44.8	21.2

Table A-10. Percent of wildlife value orientation type indicating interest in future participation in recreational fishing.

Value Types	Not at all interested	Slightly interested	Moderately interested	Strongly interested
Utilitarian	30.0	26.9	20.7	22.4
Pluralist	27.4	25.5	21.5	25.6
Mutualist	50.1	26.7	14.6	8.7
Distanced	47.6	29.1	15.6	7.7

Table A-11. Percent of wildlife value orientation type indicating interest in future participation in recreational hunting.

Value Types	Not at all interested	Slightly interested	Moderately interested	Strongly interested
Utilitarian	55.1	18.9	11.1	14.9
Pluralist	52.7	18.1	11.7	17.5
Mutualist	89.2	6.7	2.5	1.6
Distanced	85.0	7.4	5.3	2.3

Table A-12. Percent of wildlife value orientation type indicating interest in future participation in wildlife viewing.

Value Types	Not at all interested	Slightly interested	Moderately interested	Strongly interested
Utilitarian	24.2	26.5	26.8	22.5
Pluralist	16.9	24.1	27.9	31.0
Mutualist	11.8	18.2	26.8	43.2
Distanced	20.2	28.1	26.9	24.8

Table A-13. Percent of wildlife value orientation type indicating it is likely they would "consider taking a trip to Africa…" to view wildlife.

Value Types	Not at all likely	Slightly likely	Moderately likely	Extremely likely
Utilitarian	60.4	18.3	11.2	10.1
Pluralist	56.9	16.1	12.3	14.7
Mutualist	35.4	19.9	17.2	27.4
Distanced	40.5	28.9	15.9	14.7

Table A-14. Percent of wildlife value orientation type indicating it is likely they would "consider taking a trip to a remote area in Alaska to view wildlife."

Value Types	Not at all likely	Slightly likely	Moderately likely	Extremely likely
Utilitarian	29.4	27.5	22.1	21.0
Pluralist	30.2	20.6	23.7	25.6
Mutualist	16.0	19.0	25.4	39.5
Distanced	26.3	22.5	32.3	18.9

Table A-15. Percent of environmentalism by state.

State	Environmentalism
Alaska	46.4
Arizona	50.2
California	55.7
Colorado	56.3
Hawai`i	64.8
Idaho	42.5
Kansas	50.0
Montana	47.6
Nebraska	47.2
Nevada	54.5
New Mexico	55.0
North Dakota	46.8
Oklahoma	44.9
Oregon	56.7
South Dakota	48.6
Texas	49.6
Utah	38.7
Washington	62.4
Wyoming	46.8

Table A-16. Aggregate sociodemographic results represented by percentage of respondents in state.

State	Above the modal income ($30,000-$49,000)	Residing in city or large city	Highest education level attained high school or less
Alaska	59.1	37.6	30.0
Arizona	62.6	79.1	24.4
California	56.2	71.7	21.5
Colorado	63.6	73.1	19.5
Hawai`i	64.4	49.4	21.3
Idaho	48.4	48.7	33.4
Kansas	50.2	51.8	28.4
Montana	44.6	38.2	30.3
Nebraska	55.4	50.5	32.1
Nevada	60.2	78.9	28.3
New Mexico	53.0	63.8	23.0
North Dakota	44.1	43.0	33.2
Oklahoma	45.0	46.5	31.6
Oregon	53.4	56.7	23.7
South Dakota	45.2	36.4	36.5
Texas	60.5	68.3	21.8
Utah	52.0	60.1	22.2
Washington	62.6	63.6	21.6
Wyoming	49.7	30.9	30.2

Table A-17. Percent of active hunters[1] by state.

State	Active hunters
Alaska	31.5
Arizona	9.3
California	5.7
Colorado	16.7
Hawai`i	16.3
Idaho	29.5
Kansas	24.8
Montana	39.4
Nebraska	24.3
Nevada	9.1
New Mexico	23.8
North Dakota	37.6
Oklahoma	25.2
Oregon	22.5
South Dakota	30.3
Texas	17.1
Utah	22.7
Washington	16.4
Wyoming	31.0

[1]Percent of past hunters who hunted in the past 12 months.

TableA-18. Percent of wildlife value orientation type indicating each approach as that which "best resembles how things are now" in the state.

Value Types	Approach 1	Approach 2	Approach 3	Approach 4
Utilitarian	14.3	16.6	21.1	48.0
Pluralist	16.3	18.2	23.2	42.3
Mutualist	15.1	29.7	12.1	43.1
Distanced	15.5	21.4	14.0	49.1

Table A-19. Percent of wildlife value orientation type indicating each approach as that which "best represents how things should be" in the state.

Value Types	Approach 1	Approach 2	Approach 3	Approach 4
Utilitarian	13.0	7.8	21.0	58.2
Pluralist	6.8	10.0	17.7	65.5
Mutualist	5.3	3.8	13.0	77.8
Distanced	6.2	4.0	20.2	69.6

Table A-20. Percent of wildlife value orientation type selecting different approaches for *how things are now* and for *how things should be* in the state.

Value Types	Satisfied	Dissatisfied
Utilitarian	44.1	55.9
Pluralist	51.1	48.9
Mutualist	55.9	44.1
Distanced	52.2	47.8

Table A-21. Percent of wildlife value orientation type agreeing with the statement "I feel that my opinions are heard by fish and wildlife decision-makers in my state."

Value Types	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
Utilitarian	13.7	11.2	9.5	41.9	13.6	8.3	1.8
Pluralist	12.9	11.1	11.6	33.1	16.2	12.3	2.9
Mutualist	17.8	16.1	10.6	37.1	11.3	5.2	1.9
Distanced	10.6	8.2	16.0	48.6	9.1	6.9	0.5

Table A-22. Percent of wildlife value orientation type agreeing with the statement "I feel that my interests are adequately taken into account by fish and wildlife decision-makers in my state."

Value Types	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
Utilitarian	9.7	11.7	11.8	34.7	20.1	9.5	2.5
Pluralist	9.3	12.4	13.2	27.8	19.4	15.1	2.9
Mutualist	14.1	17.3	14.8	28.9	15.1	7.8	2.0
Distanced	6.9	12.8	9.3	47.9	15.3	7.5	0.2

Table A-23. Percent of wildlife value orientation type agreeing with the statement "I feel that if I provide input, it will make a difference in fish and wildlife decisions in my state."

Value Types	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
Utilitarian	10.5	11.3	17.3	19.0	30.1	9.0	2.7
Pluralist	10.3	10.5	9.5	19.2	31.2	12.8	6.4
Mutualist	13.0	16.6	14.4	14.9	25.4	11.4	4.3
Distanced	6.5	12.4	19.0	23.4	30.5	7.4	0.8

Table A-24. Percent of wildlife value orientation type agreeing with the statement "I feel that my state fish and wildlife agency makes a good effort to obtain input from the public as a whole."

Value Types	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
Utilitarian	9.6	11.3	13.1	23.8	25.1	13.3	3.8
Pluralist	8.5	8.4	15.6	22.9	23.1	16.2	5.4
Mutualist	13.2	15.5	14.1	26.6	18.1	9.4	3.0
Distanced	6.3	13.0	14.8	40.3	16.7	8.3	0.6

Table A-25. Percent of wildlife value orientation type agreeing with the statement "I don't have an interest in providing input to fish and wildlife decisions in my state."

Value Types	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
Utilitarian	17.0	14.0	18.7	16.1	17.8	9.5	6.9
Pluralist	25.7	22.6	17.4	14.3	10.4	5.7	4.1
Mutualist	30.9	22.2	18.2	12.6	8.4	5.0	2.7
Distanced	10.5	14.0	20.1	13.4	22.9	10.6	8.5

Table A-26. Percent of wildlife value orientation type agreeing with the statement "I trust my state fish and wildlife agency to make good decisions without my input."

Value Types	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
Utilitarian	10.5	10.3	16.3	13.1	22.2	19.2	8.3
Pluralist	12.4	11.0	13.4	11.9	21.6	20.3	9.3
Mutualist	17.7	16.2	18.9	13.1	19.9	10.2	4.1
Distanced	9.4	7.9	14.3	23.9	25.7	11.5	7.3

Table A-27. Percent of wildlife value orientation type that trusts their federal government to do what is right for the country.

Value Types	Almost never	Only some of the time	Most of the time	Almost always
Utilitarian	7.8	38.7	47.0	6.6
Pluralist	8.9	39.7	42.7	8.7
Mutualist	23.0	52.0	22.1	3.0
Distanced	11.4	51.9	31.4	5.2

Table A-28. Percent of wildlife value orientation type that trusts their state government to do what is right for the state.

Value Types	Almost never	Only some of the time	Most of the time	Almost always
Utilitarian	7.9	41.3	45.8	5.1
Pluralist	6.7	39.6	48.3	5.4
Mutualist	10.5	55.4	31.6	2.5
Distanced	5.2	50.2	42.1	2.6

Table A-29. Percent of wildlife value orientation type that trusts their state fish and wildlife agency to do what is right for fish and wildlife management.

Value Types	Almost never	Only some of the time	Most of the time	Almost always
Utilitarian	3.7	25.7	59.3	11.3
Pluralist	4.2	27.2	55.8	12.8
Mutualist	5.9	43.7	45.1	5.3
Distanced	4.6	41.1	49.8	4.5

Table A-30. Percent of wildlife value orientation type agreeing with actions to address bear situation 1[1].

Value type	Do nothing	Provide more hunting	Conduct controlled hunts
Utilitarian	15.2	65.1	82.4
Pluralist	16.0	52.3	75.6
Mutualist	31.2	13.8	56.1
Distanced	28.3	25.0	68.0

[1]Bears wandering into areas where humans live in search of food. Bears are getting into trash and pet food containers.

Table A-31. Percent of wildlife value orientation type agreeing with actions to address bear situation 2[1].

Value type	Do nothing	Provide more hunting	Conduct controlled hunts
Utilitarian	5.9	72.9	89.7
Pluralist	9.6	61.2	85.4
Mutualist	13.6	21.7	76.7
Distanced	13.7	35.9	86.0

[1]Bears are wandering into areas where humans live in search of food. Human deaths from bear attacks have occurred.

Table A-32. Percent of wildlife value orientation type agreeing with actions to address deer situation 1[1].

Value type	Do nothing	Provide more hunting	Conduct controlled hunts	Permanent contraceptives	Short-term contraceptives
Utilitarian	21.8	85.1	75.5	21.3	59.5
Pluralist	24.0	79.6	76.2	17.9	63.5
Mutualist	48.1	33.3	55.5	15.0	72.7
Distanced	43.8	43.9	66.1	19.3	76.7

[1]Deer numbers are increasing. There are complaints about deer entering people's yards and eating shrubs and garden plants.

Table A-33. Percent of wildlife value orientation type agreeing with actions to address deer situation 2[1].

Value type	Do nothing	Provide more hunting	Conduct controlled hunts	Permanent contraceptives	Short-term contraceptives
Utilitarian	8.4	83.6	88.3	33.9	68.8
Pluralist	9.2	79.7	86.2	27.1	69.0
Mutualist	16.2	39.1	75.8	26.1	77.6
Distanced	15.9	55.6	87.7	27.8	81.8

[1]Deer numbers are increasing. Authorities are concerned because deer are carrying a disease that is transmissible to some domestic animals and livestock.

Table A-34. Funding and programming approach cross-tabulation for Alaska.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	5.6	1.2	2.1	9.1	18.0
	Approach 2	1.4	4.8	4.4	17.6	28.2
	Approach 3	3.1	1.0	5.4	6.2	15.7
	Approach 4	3.7	3.1	4.6	26.7	38.1
Total (desired)		13.7	10.1	16.6	59.6	100.0

Table A-35. Funding and programming approach cross-tabulation for Arizona.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	1.8	2.0	2.9	7.8	14.5
	Approach 2	0.9	4.7	4.9	14.3	24.7
	Approach 3	0.7	0.2	8.5	9.6	18.9
	Approach 4	2.0	1.6	4.7	33.6	41.9
Total (desired)		5.3	8.5	20.9	65.3	100.0

Table A-36. Funding and programming approach cross-tabulation for California.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	3.0	0.6	1.6	6.6	11.8
	Approach 2	1.4	1.0	2.4	11.8	16.5
	Approach 3	1.4	0.8	4.4	9.0	15.5
	Approach 4	2.8	1.6	5.8	46.0	56.2
Total (desired)		8.6	4.0	14.1	73.3	100.0

Table A-37. Funding and programming approach cross-tabulation for Colorado.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	1.4	1.0	2.2	7.6	12.2
	Approach 2	1.5	4.6	2.6	16.0	24.7
	Approach 3	1.2	1.0	7.6	10.5	20.3
	Approach 4	1.0	0.7	4.5	36.6	42.8
Total (desired)		5.2	7.4	16.8	70.6	100.0

Table A-38. Funding and programming approach cross-tabulation for Hawai`i.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	3.1	0.5	1.2	4.6	9.5
	Approach 2	1.7	4.0	4.6	12.6	22.9
	Approach 3	0.9	0.5	5.2	7.7	14.3
	Approach 4	3.8	2.4	7.1	40.1	53.4
Total (desired)		9.5	7.4	18.1	65.1	100.0

Table A-39. Funding and programming approach cross-tabulation for Idaho.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	7.0	2.9	5.2	10.8	25.9
	Approach 2	1.6	6.1	3.7	9.9	21.3
	Approach 3	3.0	1.7	7.3	11.1	23.1
	Approach 4	1.3	1.6	3.4	23.5	29.7
Total (desired)		12.9	12.3	19.6	55.3	100.0

Table A-40. Funding and programming approach cross-tabulation for Kansas.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	4.4	1.2	5.4	8.6	19.7
	Approach 2	2.4	4.8	2.8	16.1	26.1
	Approach 3	0.6	0.4	8.4	8.0	17.5
	Approach 4	2.0	0.6	6.0	28.1	36.7
Total (desired)		9.4	7.0	22.7	60.8	100.0

Table A-41. Funding and programming approach cross-tabulation for Montana.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	5.1	2.5	4.7	11.8	24.1
	Approach 2	1.7	3.4	2.6	15.0	22.7
	Approach 3	2.6	1.7	8.6	12.3	25.2
	Approach 4	1.3	1.3	2.8	22.5	27.9
Total (desired)		10.7	8.9	18.8	61.7	100.0

Table A-42. Funding and programming approach cross-tabulation for Nebraska.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	5.4	1.9	4.9	6.5	18.7
	Approach 2	2.2	5.1	4.4	14.0	25.7
	Approach 3	1.7	1.1	7.0	9.0	18.9
	Approach 4	1.3	1.6	3.8	30.0	36.7
Total (desired)		10.6	9.7	20.2	59.5	100.0

Table A-43. Funding and programming approach cross-tabulation for Nevada.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	4.4	1.9	3.3	6.3	15.9
	Approach 2	0.9	5.1	4.0	13.1	23.0
	Approach 3	0.7	1.4	6.8	11.8	20.7
	Approach 4	1.9	1.9	5.6	31.0	40.4
Total (desired)		7.8	10.3	19.7	62.2	100.0

Table A-44. Funding and programming approach cross-tabulation for New Mexico.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	2.7	1.9	3.8	8.7	17.1
	Approach 2	1.5	2.7	3.7	18.8	26.7
	Approach 3	1.8	2.0	5.7	12.3	21.7
	Approach 4	1.4	1.4	3.3	28.4	34.5
Total (desired)		7.3	8.0	16.4	68.3	100.0

Table A-45. Funding and programming approach cross-tabulation for North Dakota.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	7.3	0.9	4.6	6.8	19.6
	Approach 2	2.2	5.2	5.4	13.0	25.8
	Approach 3	1.7	0.5	13.9	8.2	24.2
	Approach 4	1.4	1.7	3.2	24.1	30.4
Total (desired)		12.5	8.3	27.2	52.0	100.0

Table A-46. Funding and programming approach cross-tabulation for Oklahoma.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	8.3	3.0	6.0	11.8	29.1
	Approach 2	2.6	6.0	5.6	12.8	26.9
	Approach 3	0.7	1.4	10.5	9.1	21.8
	Approach 4	1.1	0.6	4.4	16.1	22.2
Total (desired)		12.7	11.0	26.5	49.9	100.0

Table A-47. Funding and programming approach cross-tabulation for Oregon.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	3.3	1.9	1.7	4.8	11.8
	Approach 2	1.2	2.9	2.1	13.5	19.7
	Approach 3	1.2	1.6	5.4	10.4	18.5
	Approach 4	1.4	1.6	4.5	42.6	50.0
Total (desired)		7.1	8.0	13.7	71.3	100.0

Table A-48. Funding and programming approach cross-tabulation for South Dakota.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	6.8	1.6	4.5	8.6	21.5
	Approach 2	2.2	6.0	4.9	15.1	28.2
	Approach 3	1.2	1.3	9.7	8.0	20.2
	Approach 4	0.9	1.5	3.3	24.5	30.2
Total (desired)		11.0	10.3	22.5	56.2	100.0

Table A-49. Funding and programming approach cross-tabulation for Texas.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	4.9	1.6	4.3	7.7	18.6
	Approach 2	1.2	2.8	5.5	15.2	24.7
	Approach 3	1.2	1.2	6.7	8.5	17.6
	Approach 4	1.4	1.8	5.1	30.8	39.1
Total (desired)		8.7	7.3	21.7	62.3	100.0

Table A-50. Funding and programming approach cross-tabulation for Utah.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	4.5	2.1	2.3	9.7	18.6
	Approach 2	2.1	2.8	4.9	17.0	26.7
	Approach 3	1.6	0.9	6.8	8.9	18.1
	Approach 4	1.4	1.6	6.4	27.3	36.6
Total (state should take)		9.5	7.3	20.3	62.8	100.0

Table A-51. Funding and programming approach cross-tabulation for Washington.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	2.8	0.6	0.4	5.3	9.0
	Approach 2	1.6	1.6	3.5	16.9	23.6
	Approach 3	2.2	1.8	5.9	8.4	18.3
	Approach 4	0.8	1.4	3.7	43.2	49.1
Total (state should take)		7.3	5.3	13.6	73.9	100.0

Table A-52. Funding and programming approach cross-tabulation for Wyoming.

		Desired approach				Total (perceived)
		Approach 1	Approach 2	Approach 3	Approach 4	
Perceived current approach	Approach 1	6.2	2.3	2.9	12.8	24.2
	Approach 2	0.9	4.6	2.6	14.5	22.6
	Approach 3	0.9	0.9	11.7	12.8	26.3
	Approach 4	0.8	1.2	1.4	23.6	26.9
Total (state should take)		8.7	9.0	18.6	63.7	100.0

Table A-53. Percent of respondents agreeing with the statement "I feel that my opinions are heard by fish and wildlife decision-makers in my state."

State	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
Alaska	16.1	8.9	10.4	25.1	22.0	12.4	5.2
Arizona	12.7	12.5	8.4	42.4	13.6	8.6	1.9
California	16.3	14.0	12.2	38.8	9.4	7.5	1.9
Colorado	10.7	10.7	9.6	42.2	16.6	9.0	1.1
Hawai`i	11.7	9.3	7.6	42.8	16.6	9.6	2.4
Idaho	12.0	14.2	9.8	35.1	18.4	8.5	2.0
Kansas	8.0	8.8	12.0	46.9	15.1	7.3	1.9
Montana	10.8	12.6	13.2	28.7	20.7	11.2	2.8
Nebraska	12.7	9.1	9.7	42.3	16.5	7.1	2.7
Nevada	12.3	9.9	9.1	45.2	14.7	6.6	2.1
New Mexico	16.8	11.7	13.4	31.1	16.5	7.6	2.9
North Dakota	7.3	9.0	9.8	36.9	22.6	10.0	4.4
Oklahoma	13.1	10.3	10.0	36.4	15.4	12.0	2.7
Oregon	12.7	15.1	8.4	35.9	14.9	10.9	2.0
South Dakota	9.6	12.5	11.0	37.2	17.7	9.2	2.7
Texas	15.6	11.0	10.5	40.9	12.7	7.6	1.7
Utah	13.2	12.7	12.0	38.1	15.6	7.2	1.2
Washington	13.5	13.6	13.5	38.5	14.2	5.2	1.5
Wyoming	11.6	9.7	12.5	29.3	19.5	13.9	3.5

Table A-54. Percent of respondents with the statement "I feel that my interests are adequately taken into account by fish and wildlife decision-makers in my state."

State	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
Alaska	13.5	15.7	10.7	18.5	21.5	14.8	5.2
Arizona	11.3	13.5	10.8	34.4	19.4	9.2	1.5
California	11.1	14.6	13.5	34.0	15.8	8.8	2.3
Colorado	8.1	9.6	11.7	37.4	20.7	10.7	1.8
Hawai`i	9.4	9.6	9.4	37.3	22.3	9.1	2.8
Idaho	9.9	16.3	11.9	30.7	19.2	10.5	1.5
Kansas	7.1	10.5	14.2	37.9	18.0	9.8	2.5
Montana	10.3	14.4	11.3	24.5	23.6	12.9	3.2
Nebraska	8.7	10.7	10.9	35.0	20.8	10.9	3.0
Nevada	9.7	10.4	11.9	33.6	23.4	9.7	1.3
New Mexico	13.3	13.8	15.6	25.9	19.2	8.9	3.3
North Dakota	5.5	8.0	11.7	32.3	25.8	13.1	3.5
Oklahoma	9.9	10.6	11.8	31.2	20.9	12.3	3.3
Oregon	12.1	15.8	11.6	27.5	20.7	10.9	1.3
South Dakota	7.8	12.0	12.6	31.2	22.1	11.5	2.7
Texas	11.3	15.1	11.8	33.0	15.3	11.3	2.3
Utah	11.4	14.4	12.4	31.9	20.1	8.5	1.3
Washington	10.6	13.6	15.7	31.7	21.1	6.5	0.7
Wyoming	9.4	12.1	14.2	25.2	23.0	13.4	2.7

Table A-55. Percent of respondents agreeing with the statement "I feel that if I provide input, it will make a difference in fish and wildlife decisions in my state."

State	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
Alaska	11.3	14.4	15.0	13.7	28.5	11.3	5.9
Arizona	9.6	13.8	14.6	23.2	26.1	9.6	3.1
California	12.0	13.3	16.1	14.0	30.5	9.9	4.1
Colorado	9.3	10.1	15.5	22.6	28.8	10.3	3.4
Hawai`i	9.9	11.2	16.0	21.5	26.2	10.9	4.2
Idaho	13.2	15.1	14.5	16.3	28.6	8.7	3.6
Kansas	7.1	11.1	17.5	23.0	26.1	11.5	3.6
Montana	10.4	13.0	16.8	14.7	28.9	13.0	3.3
Nebraska	7.2	9.8	17.2	24.2	27.0	10.7	3.9
Nevada	8.9	10.7	14.6	21.0	31.4	9.5	3.9
New Mexico	13.3	11.3	14.7	18.0	25.3	11.5	5.8
North Dakota	6.9	8.9	12.9	24.3	29.1	13.9	4.0
Oklahoma	9.5	13.7	14.9	19.7	26.1	11.8	4.3
Oregon	13.2	15.9	13.4	17.1	27.3	9.4	3.6
South Dakota	8.8	11.5	16.6	18.5	30.5	10.9	3.2
Texas	10.3	12.0	11.6	21.3	28.9	12.2	3.8
Utah	11.0	15.4	17.7	20.0	27.2	6.8	1.8
Washington	9.3	17.6	18.4	18.9	26.9	7.1	1.9
Wyoming	10.6	10.4	15.8	18.9	29.2	11.8	3.3

Table A-56. Percent of respondents agreeing with the statement "I feel that my state fish and wildlife agency makes a good effort to obtain input from the public as a whole."

State	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
Alaska	9.1	8.3	9.1	13.0	30.2	20.6	9.8
Arizona	8.1	12.5	12.7	27.1	22.8	13.4	3.3
California	10.1	13.8	14.2	29.5	18.5	11.0	2.8
Colorado	7.6	9.1	12.8	27.5	24.2	15.6	3.1
Hawai`i	8.5	9.8	19.1	20.8	23.5	13.4	5.0
Idaho	9.1	10.0	15.5	19.3	25.6	16.3	4.2
Kansas	7.5	10.9	13.4	27.6	24.7	12.1	3.8
Montana	7.4	11.1	10.9	12.8	27.5	21.9	8.5
Nebraska	8.2	9.8	10.3	27.0	25.1	15.1	4.5
Nevada	8.3	10.5	13.8	26.6	23.5	14.6	2.8
New Mexico	13.2	10.6	14.2	20.0	23.1	14.5	4.5
North Dakota	5.3	6.5	11.7	17.6	30.9	21.6	6.5
Oklahoma	9.5	12.2	12.5	24.7	21.6	14.7	4.8
Oregon	9.6	14.7	13.4	20.8	20.5	16.4	4.6
South Dakota	6.2	10.3	12.9	19.3	26.4	19.1	5.6
Texas	13.2	11.3	13.9	27.5	21.2	9.4	3.6
Utah	7.6	14.5	16.6	21.5	24.5	12.1	3.2
Washington	9.5	12.8	19.1	23.2	23.6	9.6	2.2
Wyoming	5.9	8.5	13.0	14.6	27.6	20.8	9.6

Table A-57. Percent of respondents agreeing with the statement "I don't have an interest in providing input to fish and wildlife decisions in my state."

State	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
Alaska	27.5	17.1	20.7	13.9	12.7	5.0	3.1
Arizona	19.3	14.9	21.0	16.0	14.7	7.7	6.4
California	24.4	19.3	16.5	11.3	15.9	6.8	5.8
Colorado	26.3	16.6	21.1	12.2	13.0	7.1	3.7
Hawai`i	18.0	12.8	20.7	20.2	14.8	8.5	5.0
Idaho	19.8	19.5	18.8	17.9	11.5	7.2	5.3
Kansas	15.2	17.5	24.2	17.7	14.0	6.5	5.0
Montana	28.6	20.5	16.5	13.0	9.6	8.5	3.4
Nebraska	17.5	17.7	19.2	14.5	13.0	10.4	7.7
Nevada	23.6	17.2	17.1	17.6	12.0	5.9	6.7
New Mexico	27.2	21.5	17.9	13.6	9.7	6.1	4.1
North Dakota	15.2	13.6	20.3	21.5	14.3	8.5	6.6
Oklahoma	19.1	16.7	15.4	16.7	14.7	9.8	7.5
Oregon	22.4	18.9	23.8	13.3	10.0	6.9	4.6
South Dakota	15.3	16.9	20.9	17.1	14.2	8.3	7.4
Texas	21.4	18.5	19.1	16.2	12.6	7.8	4.4
Utah	20.8	15.4	20.8	15.6	13.6	8.7	5.0
Washington	23.4	20.6	17.3	16.4	11.5	7.8	3.0
Wyoming	21.1	17.8	21.9	16.2	11.1	6.4	5.5

Table A-58. Percent of respondents agreeing with the statement "I trust my state fish and wildlife agency to make good decisions without my input."

State	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
Alaska	18.8	14.3	14.5	12.3	21.9	13.8	4.4
Arizona	14.1	10.8	13.3	13.9	21.9	16.1	9.9
California	15.5	13.7	18.9	11.6	19.5	13.3	7.5
Colorado	10.4	12.2	16.1	15.4	23.4	15.3	7.3
Hawai`i	10.4	10.3	12.9	18.6	21.7	16.2	10.0
Idaho	15.9	12.6	15.5	15.1	20.2	14.3	6.4
Kansas	6.5	8.6	17.6	17.0	24.5	17.8	7.9
Montana	15.5	13.9	17.6	11.8	21.1	14.3	5.9
Nebraska	7.1	8.6	12.8	13.0	25.9	20.6	12.0
Nevada	12.8	9.9	13.6	16.6	20.6	18.3	8.1
New Mexico	17.5	14.4	17.3	14.3	18.6	11.8	6.1
North Dakota	6.1	6.9	9.8	15.9	24.6	24.2	12.5
Oklahoma	8.6	11.2	10.6	13.1	23.1	22.6	10.8
Oregon	15.2	13.3	19.8	12.0	20.3	13.8	5.6
South Dakota	8.8	10.0	12.5	11.1	26.6	20.2	10.7
Texas	11.4	10.8	13.4	17.2	23.5	18.8	4.9
Utah	12.1	10.6	15.4	13.9	25.1	15.7	7.2
Washington	12.1	12.6	19.7	17.1	24.9	9.3	4.3
Wyoming	10.7	9.1	15.4	15.5	21.4	19.3	8.7

Table A-59. Percent of respondents that trust their federal government to do what is right for the country by state.

State	Almost never	Only some of the time	Most of the time	Almost always
Alaska	12.3	46.6	34.9	6.2
Arizona	9.8	44.5	38.9	6.8
California	17.0	46.7	29.7	6.6
Colorado	11.6	49.4	33.5	5.6
Hawai`i	9.6	43.8	40.6	5.9
Idaho	12.1	42.7	40.3	4.9
Kansas	8.1	43.6	42.8	5.5
Montana	11.4	47.9	35.9	4.9
Nebraska	8.7	41.8	43.6	5.9
Nevada	11.8	43.4	38.1	6.8
New Mexico	14.9	43.6	35.5	6.0
North Dakota	7.7	39.9	44.9	7.5
Oklahoma	8.2	40.5	46.3	5.0
Oregon	20.4	49.4	26.7	3.5
South Dakota	8.1	42.8	43.0	6.2
Texas	11.2	40.3	43.5	5.0
Utah	6.8	40.1	47.9	5.2
Washington	14.4	53.0	29.8	2.8
Wyoming	9.8	46.0	39.6	4.5

Table A-60. Percent of respondents that trust their state government to do what is right for the state by state.

State	Almost never	Only some of the time	Most of the time	Almost always
Alaska	11.4	46.0	36.9	5.7
Arizona	5.7	46.8	42.9	4.5
California	10.7	51.5	34.7	3.1
Colorado	6.4	44.8	44.0	4.8
Hawai`i	6.5	50.2	39.1	4.2
Idaho	6.7	35.2	51.8	6.3
Kansas	4.9	43.3	47.6	4.2
Montana	6.9	47.2	42.5	3.4
Nebraska	4.3	36.6	54.6	4.6
Nevada	6.5	41.3	46.1	6.1
New Mexico	10.1	53.3	32.7	3.9
North Dakota	2.9	27.8	59.1	10.2
Oklahoma	8.8	40.2	47.3	3.8
Oregon	9.5	46.2	41.1	3.1
South Dakota	3.4	27.0	62.1	7.5
Texas	7.6	43.5	44.4	4.5
Utah	5.3	31.7	54.7	8.3
Washington	4.1	52.4	41.3	2.2
Wyoming	4.2	32.7	56.7	6.4

Table A-61. Percent of respondents that trust their state fish and wildlife agency to do what is right for fish and wildlife management by state.

State	Almost never	Only some of the time	Most of the time	Almost always
Alaska	6.2	32.2	49.0	12.6
Arizona	4.1	30.6	55.0	10.3
California	5.8	39.7	48.7	5.8
Colorado	2.2	26.5	61.7	9.6
Hawai`i	4.2	34.3	52.2	9.3
Idaho	5.7	31.5	54.8	8.0
Kansas	2.7	26.7	59.1	11.6
Montana	4.5	29.4	55.0	11.1
Nebraska	2.7	23.0	61.7	12.5
Nevada	3.3	30.5	57.4	8.9
New Mexico	5.8	38.0	47.9	8.3
North Dakota	1.9	17.0	63.2	18.0
Oklahoma	3.8	24.6	56.7	15.0
Oregon	3.5	38.1	49.2	9.2
South Dakota	3.6	22.3	59.0	15.2
Texas	4.5	29.6	54.0	11.9
Utah	5.2	27.2	58.2	9.5
Washington	3.9	39.9	52.5	3.7
Wyoming	3.2	25.6	57.4	13.7

Table A-62. Biodiversity stated choice results for Alaska.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status[6]	3	26.9			
Common			-.47	< .001	.63
Declining/Endangered			.47	-	-
Origin	2	33.7			
Native			.59	< .001	1.80
Non-Native			-.59	-	-
Use	1	39.4			
Game			.69	< .001	2.00
Non-Game			-.69	-	-
Proportion of choices correctly predicted	78.6%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.59 to .59 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., .94 / (.94 + 1.18 + 1.38) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

[6]At the request of the state agency, Alaska's version of the survey only included 2 levels for status rather than 3.

TableA-63. Biodiversity stated choice results for Arizona.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	3	26.7			
Common			-.40	-	-
Declining/Endangered			.38	< .001	1.46
Extirpated			.02	.686	1.02
Origin	1	40.0			
Native			.60	< .001	1.82
Non-Native			-.60	-	-
Use	2	33.3			
Game			.50	< .001	1.65
Non-Game			-.50	-	-
Proportion of choices correctly predicted	75.2%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.60 to .60 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., .80 / (.80 + 1.20 + 1.00) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-64. Biodiversity stated choice results for California.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	40.8			
Common			-.64	-	-
Declining/Endangered			.52	< .001	1.68
Extirpated			.12	.002	1.12
Origin	2	40.1			
Native			.63	< .001	1.88
Non-Native			-.63	-	-
Use	3	19.1			
Game			.30	< .001	1.35
Non-Game			-.30	-	-
Proportion of choices correctly predicted	76.5%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.63 to .63 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.28 / (1.28 + 1.26 + .60) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-65. Biodiversity stated choice results for Colorado.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	3	22.5			
Common			-.38	-	-
Declining/Endangered			.34	< .001	1.41
Extirpated			.04	.322	1.04
Origin	1	42.0			
Native			.71	< .001	2.04
Non-Native			-.71	-	-
Use	2	35.5			
Game			.60	< .001	1.83
Non-Game			-.60	-	-
Proportion of choices correctly predicted	75.9%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.71 to .71 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., .76 / (.76 + 1.42 + 1.20) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-66. Biodiversity stated choice results for Hawai`i.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	2	41.7			
Common			-.58	-	-
Declining/Endangered			.50	< .001	1.65
Extirpated			.08	.025	1.08
Origin	1	50.4			
Native			.70	< .001	2.02
Non-Native			-.70	-	-
Use	3	7.9			
Game			.11	< .001	1.12
Non-Game			-.11	-	-
Proportion of choices correctly predicted	77.0%				

[1] Estimated coefficients represent the utility associated with the corr
esponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.70 to .70 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.16 / (1.16 + 1.40 + .22) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-67. Biodiversity stated choice results for Idaho.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	2	32.4			
Common			-.57	-	-
Declining/Endangered			.60	< .001	1.82
Extirpated			-.03	.431	.97
Origin	3	30.8			
Native			.57	< .001	1.77
Non-Native			-.57	-	-
Use	1	36.8			
Game			.68	< .001	1.96
Non-Game			-.68	-	-
Proportion of choices correctly predicted	79.5%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.57 to .57 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.20 / (1.20 + 1.14 + 1.36) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-68. Biodiversity stated choice results for Kansas.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	50.7			
Common			-.74	-	-
Declining/Endangered			.53	< .001	1.70
Extirpated			.21	< .001	1.23
Origin	2	26.7			
Native			.39	< .001	1.47
Non-Native			-.39	-	-
Use	3	22.6			
Game			.33	< .001	1.39
Non-Game			-.33	-	-
Proportion of choices correctly predicted	77.5%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.39 to .39 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.48 / (1.48 + .78 + .66) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-69. Biodiversity stated choice results for Montana.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	41.0			
Common			-.55	-	-
Declining/Endangered			.18	< .001	1.20
Extirpated			.37	< .001	1.45
Origin	3	27.6			
Native			.37	< .001	1.45
Non-Native			-.37	-	-
Use	2	31.4			
Game			.42	< .001	1.53
Non-Game			-.42	-	-
Proportion of choices correctly predicted	73.8%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.37 to .37 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.10 / (1.10 + .74 + .84) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-70. Biodiversity stated choice results for Nebraska.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	46.8			
Common			-.59	-	-
Declining/Endangered			.44	< .001	1.55
Extirpated			.15	< .001	1.16
Origin	3	22.2			
Native			.28	< .001	1.33
Non-Native			-.28	-	-
Use	2	31.0			
Game			.39	< .001	1.48
Non-Game			-.39	-	-
Proportion of choices correctly predicted	70.0%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.28 to .28 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.18 / (1.18 + .56 + .78) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-71. Biodiversity stated choice results for Nevada.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	3	21.0			
Common			-.29	-	-
Declining/Endangered			.28	< .001	1.32
Extirpated			.01	.758	1.01
Origin	2	37.7			
Native			.52	< .001	1.68
Non-Native			-.52	-	-
Use	1	41.3			
Game			.57	< .001	1.76
Non-Game			-.57	-	-
Proportion of choices correctly predicted	74.3%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.52 to .52 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., .58 / (.58 + 1.04 + 1.14) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-72. Biodiversity stated choice results for New Mexico.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	3	20.4			
Common			-.25	-	-
Declining/Endangered			.31	< .001	1.37
Extirpated			-.06	.070	.94
Origin	1	40.8			
Native			.62	< .001	1.85
Non-Native			-.62	-	-
Use	2	38.8			
Game			.59	< .001	1.80
Non-Game			-.59	-	-
Proportion of choices correctly predicted	74.3%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.62 to .62 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., .62 / (.62 + 1.24 + 1.18) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-73. Biodiversity stated choice results for North Dakota.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	51.6			
Common			-.63	-	-
Declining/Endangered			.30	< .001	1.35
Extirpated			.33	< .001	1.40
Origin	3	11.5			
Native			.14	< .001	1.15
Non-Native			-.14	-	-
Use	2	36.9			
Game			.45	< .001	1.56
Non-Game			-.45	-	-
Proportion of choices correctly predicted	73.2%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.14 to .14 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.26/ (1.26 + .28 + .90) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-74. Biodiversity stated choice results for Oklahoma.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	46.8			
Common			-.65	-	-
Declining/Endangered			.52	< .001	1.68
Extirpated			.13	< .001	1.36
Origin	3	24.4			
Native			.34	< .001	1.40
Non-Native			-.34	-	-
Use	2	28.8			
Game			.40	< .001	1.50
Non-Game			-.40	-	-
Proportion of choices correctly predicted	75.8%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.34 to .34 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.30 / (1.30 + .68 + .80) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-75. Biodiversity stated choice results for Oregon.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	2	30.6			
Common			-.52	-	-
Declining/Endangered			.47	< .001	1.60
Extirpated			.05	.277	1.06
Origin	1	41.8			
Native			.71	< .001	2.04
Non-Native			-.71	-	-
Use	3	27.6			
Game			.47	< .001	1.60
Non-Game			-.47	-	-
Proportion of choices correctly predicted	79.7%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.71 to .71 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.04 / (1.04 + 1.42 + .94) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-76. Biodiversity stated choice results for South Dakota.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	52.9			
Common			-.64	-	-
Declining/Endangered			.27	< .001	1.31
Extirpated			.37	< .001	1.44
Origin	3	8.3			
Native			.10	< .001	1.11
Non-Native			-.10	-	-
Use	2	38.8			
Game			.47	< .001	1.59
Non-Game			-.47	-	-
Proportion of choices correctly predicted	69.8%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.10 to .10 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.28 / (1.28 + .20 + .94) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-77. Biodiversity stated choice results for Texas.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	49.7			
Common			-.72	-	-
Declining/Endangered			.62	< .001	1.86
Extirpated			.10	.142	1.10
Origin	2	26.2			
Native			.38	< .001	1.46
Non-Native			-.38	-	-
Use	3	24.1			
Game			.35	< .001	1.42
Non-Game			-.35	-	-
Proportion of choices correctly predicted	77.3%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.38 to .38 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.44 / (1.44 + .76 + .70) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-78. Biodiversity stated choice results for Utah.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	3	20.9			
Common			-.32	-	-
Declining/Endangered			.28	< .001	1.32
Extirpated			.04	.331	1.04
Origin	2	34.6			
Native			.53	< .001	1.70
Non-Native			-.53	-	-
Use	1	44.5			
Game			.68	< .001	1.98
Non-Game			-.68	-	-
Proportion of choices correctly predicted	77.8%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.53 to .53 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., .64 / (.64 + 1.06 + 1.36) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-79. Biodiversity stated choice results for Washington.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	2	33.7			
Common			-.59	-	-
Declining/Endangered			.59	< .001	1.64
Extirpated			.00	.989	1.00
Origin	1	41.2			
Native			.72	< .001	2.06
Non-Native			-.72	-	-
Use	3	25.1			
Game			.44	< .001	1.55
Non-Game			-.44	-	-
Proportion of choices correctly predicted	79.8%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.72 to .72 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.18 / (1.18 + 1.44 + .88) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-80. Biodiversity stated choice results for Wyoming.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	43.4			
Common			-.56	-	-
Declining/Endangered			.14	< .001	1.15
Extirpated			.42	< .001	1.52
Origin	3	25.6			
Native			.33	< .001	1.39
Non-Native			-.33	-	-
Use	2	31.0			
Game			.40	< .001	1.50
Non-Game			-.40	-	-
Proportion of choices correctly predicted	73.6%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.33 to .33 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.12 / (1.12 + .66 + .80) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-81. Biodiversity stated choice results for subregion 1 (California, Oregon,Washington, Idaho).

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	2	38.3			
Common			-.61	-	-
Declining/Endangered			.52	< .001	1.69
Extirpated			.09	< .001	1.10
Origin	1	40.3			
Native			.64	< .001	1.91
Non-Native			-.64	-	-
Use	3	21.4			
Game			.34	< .001	1.41
Non-Game			-.34	-	-
Proportion of choices correctly predicted	78.0%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.64 to .64 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.22 / (1.22 + 1.28 + .68) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-82. Biodiversity stated choice results for subregion 2 (Kansas, Nebraska, Texas, Oklahoma).

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	49.0			
Common			-.70	-	-
Declining/Endangered			.59	< .001	1.80
Extirpated			.11	<.001	1.12
Origin	2	25.9			
Native			.37	< .001	1.45
Non-Native			-.37	-	-
Use	3	25.1			
Game			.36	< .001	1.43
Non-Game			-.36	-	-
Proportion of choices correctly predicted	77.0%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.37 to .37 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.40 / (1.40 + .74 + .72) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-83. Biodiversity stated choice results for subregion 3 (Montana, Wyoming, North Dakota, South Dakota).

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	46.4			
Common			-.58	-	-
Declining/Endangered			.22	< .001	1.25
Extirpated			.36	<.001	1.44
Origin	3	19.2			
Native			.24	< .001	1.27
Non-Native			-.24	-	-
Use	2	34.4			
Game			.43	< .001	1.54
Non-Game			-.43	-	-
Proportion of choices correctly predicted	71.08%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.24 to .24 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.16 / (1.16 + .48 + .86) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-84. Biodiversity stated choice results for subregion 4 (Arizona, Colorado, New Mexico, Nevada, Utah).

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	3	22.4			
Common			-.34	-	-
Declining/Endangered			.33	< .001	1.39
Extirpated			.01	.416	1.01
Origin	1	40.1			
Native			.61	< .001	1.83
Non-Native			-.61	-	-
Use	2	37.5			
Game			.57	< .001	1.77
Non-Game			-.57	-	-
Proportion of choices correctly predicted	75.5%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.61 to .61 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., .68 / (.68 + 1.22 + 1.14) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-85. Biodiversity stated choice results for the utilitarian value type.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	36.6			
Common			-.53	-	-
Declining/Endangered			.43	< .001	1.53
Extirpated			.10	< .001	1.10
Origin	3	31.0			
Native			.45	< .001	1.57
Non-Native			-.45	-	-
Use	2	32.4			
Game			.47	< .001	1.61
Non-Game			-.47	-	-
Proportion of choices correctly predicted	74.8%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.45 to .45 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.06 / (1.06 + .90 + 0.94) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-86. Biodiversity stated choice results for the pluralist wildlife value orientation type.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	35.9			
Common			-.51	-	-
Declining/Endangered			.46	< .001	1.63
Extirpated			.05	.246	1.04
Origin	3	31.7			
Native			.45	< .001	1.57
Non-Native			-.45	-	-
Use	2	32.4			
Game			.46	< .001	1.59
Non-Game			-.46	-	-
Proportion of choices correctly predicted	73.6%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.45 to .45 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.02 / (1.02 + .90 + 0.92) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-87. Biodiversity stated choice results for the mutualist wildlife value orientation type.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	44.5			
Common			-.73	-	-
Declining/Endangered			.58	< .001	1.79
Extirpated			.15	< .001	1.16
Origin	2	42.1			
Native			.69	< .001	1.99
Non-Native			-.69	-	-
Use	3	13.4			
Game			.22	< .001	1.24
Non-Game			-.22	-	-
Proportion of choices correctly predicted	75.5%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.69 to .69 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.46 / (1.46 + 1.38 + 0.44) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-88. Biodiversity stated choice results for the distanced wildlife value orientation type.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	41.6			
Common			-.62	-	-
Declining/Endangered			.56	< .001	1.76
Extirpated			.06	.042	1.06
Origin	2	36.2			
Native			.54	< .001	1.70
Non-Native			-.54	-	-
Use	3	22.2			
Game			.33	< .001	1.45
Non-Game			-.33	-	-
Proportion of choices correctly predicted	75.5%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.54 to .54 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.24 / (1.24 + 1.08 + 0.66) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-89. Biodiversity stated choice results for hunters/anglers.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	33.8			
Common			-.50	-	-
Declining/Endangered			.41	< .001	1.51
Extirpated			.09	< .001	1.09
Origin	3	33.1			
Native			.49	< .001	1.63
Non-Native			-.49	-	-
Use	2	33.1			
Game			.49	< .001	1.64
Non-Game			-.49	-	-
Proportion of choices correctly predicted	75.1%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.49 to .49 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.00 / (1.00 + .98 + .98) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-90. Biodiversity stated choice results for non-hunters/anglers.

Attribute (variable)	Tier of Importance[2]	Average Importance[3]	Coefficient (Utility Score)[1,4]	p-value	Odds Ratio[5]
Status	1	40.5			
Common			-.60	-	-
Declining/Endangered			.51	< .001	1.66
Extirpated			.09	< .001	1.09
Origin	2	36.5			
Native			.54	< .001	1.72
Non-Native			-.54	-	-
Use	3	23.0			
Game			.34	< .001	1.41
Non-Game			-.34	-	-
Proportion of choices correctly predicted	75.0%				

[1] Estimated coefficients represent the utility associated with the corresponding level of the attribute. They are represented by the unstandardized regression coefficients calculated in a logistic regression in which respondent choice (species A = 1, or species B = 0) is the dependent variable, and the independent variables are the vector of differences between each attribute of the adjacent paired comparison. The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to respondents' choices. A large positive score indicates that the level substantially *increases* respondents' utility (i.e., preference) associated with the choice. A large negative coefficient indicates that the level substantially *detracts* from the overall utility of respondents.

[2]Tier of importance determined by the magnitude of the range in coefficients across levels of the attribute (e.g., -.54 to .54 for origin).

[3] Averaged importance is computed by dividing the range for each attribute by the total ranges of the 3 attributes (e.g., 1.20 / (1.20 + 1.08 + .68) for status. The averaged importance for the 3 attributes will total 100.

[4]To prevent the model from being underestimated, each attribute was represented by a number of variables equal to one less than the number of levels for the attribute (utilizing a procedure known as effects coding, similar to dummy coding for categorical variables). Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other levels of the corresponding attribute.

[5]Odds ratio, defining the factor by which the odds of selecting the species (A = 1) increases with a one-unit increase in the attribute level. An odds ratio score less than one indicates a negative relationship (odds decrease), while a score greater than one indicates a positive relationship (odds increase).

Table A-91. Respondent wildlife-related recreation participation by state represented by percentages.

State	Fishing ever	Fishing in the last 12 months	Hunting ever	Hunting in the last 12 months	Wildlife viewing ever	Wildlife viewing in the last 12 months
Alaska	91.1	44.0	52.8	16.6	68.3	45.8
Arizona	76.6	10.7	35.5	3.3	56.4	28.8
California	74.0	10.3	25.6	1.5	54.2	25.6
Colorado	86.0	20.4	35.9	6.2	65.5	42.1
Hawai`i	75.6	14.7	22.5	3.7	47.1	25.0
Idaho	89.1	27.8	57.1	17.1	67.2	41.6
Kansas	83.9	22.3	42.4	10.7	52.1	30.6
Montana	89.2	32.5	65.0	25.7	66.9	45.9
Nebraska	82.9	23.2	45.4	11.0	57.1	30.7
Nevada	81.8	12.7	34.0	3.3	57.1	27.9
New Mexico	82.3	18.3	41.7	10.0	64.0	38.4
North Dakota	82.3	30.3	52.2	19.8	45.5	24.6
Oklahoma	83.6	29.2	42.7	11.0	48.4	24.6
Oregon	86.6	21.3	39.8	9.0	67.1	36.3
South Dakota	83.6	28.9	58.3	17.8	55.2	29.3
Texas	83.0	15.5	40.8	7.0	53.2	27.3
Utah	83.4	28.4	52.8	12.1	62.3	37.8
Washington	80.7	20.4	31.8	5.4	62.3	35.8
Wyoming	87.5	34.3	59.3	18.5	69.8	47.5

Table A-92. Percent of respondents expressing interest in taking future recreational fishing trips by state.

State	Not at all interested	Slightly interested	Moderately interested	Strongly interested
Alaska	11.9	18.9	20.6	48.6
Arizona	40.2	24.6	20.3	14.8
California	42.0	27.5	17.0	13.4
Colorado	34.1	25.4	19.6	21.0
Hawai`i	41.3	31.3	14.6	12.7
Idaho	22.7	27.1	23.5	26.7
Kansas	39.8	23.9	18.8	17.5
Montana	25.0	23.3	21.6	30.2
Nebraska	37.0	26.2	17.4	19.5
Nevada	37.6	27.4	20.0	15.0
New Mexico	33.5	24.2	20.2	22.1
North Dakota	39.3	23.2	17.2	20.3
Oklahoma	34.5	22.0	20.0	23.4
Oregon	37.2	26.4	15.4	21.0
South Dakota	33.6	27.7	18.5	20.2
Texas	37.1	29.1	19.1	14.6
Utah	31.2	22.8	19.9	26.1
Washington	39.3	25.2	15.9	19.6
Wyoming	22.1	24.1	20.2	33.6

Table A-93. Percent of respondents expressing interest in taking future recreational hunting trips by state.

State	Not at all interested	Slightly interested	Moderately interested	Strongly interested
Alaska	41.0	20.0	13.9	25.0
Arizona	72.3	10.7	7.4	9.7
California	77.9	9.7	7.1	5.3
Colorado	67.7	13.6	8.4	10.3
Hawai`i	76.5	12.6	5.6	5.3
Idaho	50.4	18.4	12.0	19.2
Kansas	65.3	14.3	8.7	11.7
Montana	44.8	17.9	13.0	24.3
Nebraska	62.7	15.4	8.4	13.5
Nevada	69.4	12.9	8.6	9.1
New Mexico	61.2	15.1	7.6	16.2
North Dakota	57.6	14.2	12.9	15.3
Oklahoma	59.7	15.6	11.1	13.6
Oregon	68.9	13.6	7.1	10.4
South Dakota	53.3	18.0	13.5	15.2
Texas	64.0	18.4	6.4	11.2
Utah	60.5	13.9	7.5	18.1
Washington	72.8	11.3	8.1	7.8
Wyoming	48.5	15.1	12.5	23.9

Table A-94. Percent of respondents expressing interest in taking future recreational trips for which fish or wildlife viewing is the primary purpose of the trip by state.

State	Not at all interested	Slightly interested	Moderately interested	Strongly interested
Alaska	11.9	21.3	24.5	42.3
Arizona	18.7	18.9	28.2	34.2
California	16.1	23.2	27.0	33.8
Colorado	15.6	19.9	23.8	40.7
Hawai`i	26.2	24.4	24.4	25.0
Idaho	12.9	23.8	25.1	38.2
Kansas	22.6	23.4	28.8	25.2
Montana	16.3	21.2	22.8	39.7
Nebraska	20.5	26.7	27.4	25.3
Nevada	17.6	33.3	25.5	23.6
New Mexico	13.2	20.0	29.7	37.1
North Dakota	29.4	26.3	25.2	19.1
Oklahoma	26.3	26.7	23.4	23.6
Oregon	14.4	24.7	27.5	33.4
South Dakota	22.2	27.6	25.6	24.6
Texas	22.5	23.6	28.9	25.0
Utah	17.3	20.3	29.5	33.0
Washington	13.3	25.9	24.3	36.5
Wyoming	12.6	20.9	23.9	42.6

Table A-95. Percent of respondents that are current hunters/anglers (H/A) and current non-hunters/anglers (Non-H/A) indicating each approach as that which "best resembles how things are now" in the state.

State	Approach 1		Approach 2		Approach 3		Approach 4	
	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A
Alaska	16.9	18.5	26.6	30.6	15.3	15.8	41.1	35.1
Arizona	16.4	14.3	21.8	25.6	25.5	17.9	36.4	42.2
California	14.3	10.9	14.3	17.1	23.2	14.9	48.2	57.1
Colorado	15.9	11.3	20.3	25.7	27.5	18.3	36.2	44.7
Hawai`i	14.1	8.3	21.7	23.2	12.0	14.7	52.2	53.7
Idaho	26.0	25.6	20.2	22.0	30.2	19.2	23.7	33.2
Kansas	19.1	20.2	22.1	27.3	20.6	16.4	38.2	36.1
Montana	22.0	25.2	19.4	25.8	32.9	19.4	25.7	29.6
Nebraska	17.4	19.3	17.4	29.0	27.5	15.6	37.7	36.0
Nevada	20.0	15.7	22.5	23.1	22.5	20.0	35.0	41.1
New Mexico	17.9	16.2	19.0	29.8	28.5	19.2	34.6	34.8
North Dakota	18.9	20.2	24.4	27.0	26.1	23.7	30.7	29.0
Oklahoma	30.2	27.7	23.4	28.5	26.6	20.1	19.8	23.7
Oregon	15.0	10.8	17.3	20.3	24.1	16.6	43.6	52.3
South Dakota	20.1	22.4	26.4	30.4	26.4	16.0	27.2	31.3
Texas	18.7	18.1	19.8	26.3	31.9	14.1	29.7	41.4
Utah	19.0	18.2	17.9	31.2	25.0	14.8	38.0	35.8
Washington	15.1	7.0	18.9	24.6	27.4	16.0	38.7	52.4
Wyoming	24.2	24.1	18.8	24.9	33.2	21.8	23.8	29.1

Table A-96. Percent of respondents that are current hunters/anglers (H/A) and current non-hunters/anglers (Non-H/A) indicating each approach as that which "best represents how things should be" in the state.

State	Approach 1		Approach 2		Approach 3		Approach 4	
	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A
Alaska	15.7	11.1	12.5	7.4	13.3	19.3	58.5	62.2
Arizona	9.3	5.1	11.1	7.5	16.7	21.7	63.0	65.7
California	10.7	8.0	8.9	3.7	10.7	14.3	69.6	74.0
Colorado	8.0	4.4	11.7	5.7	10.2	19.5	70.1	70.4
Hawai`i	10.4	8.9	12.5	6.3	12.5	18.8	64.6	66.1
Idaho	16.7	10.0	12.5	12.2	15.2	22.0	55.5	55.9
Kansas	9.8	8.9	13.6	4.7	20.5	24.5	56.1	61.9
Montana	14.0	8.9	11.4	6.7	18.2	18.2	56.4	66.3
Nebraska	9.6	10.4	12.6	8.1	17.4	21.4	60.5	60.2
Nevada	11.3	7.7	11.3	9.4	18.8	21.1	58.8	61.8
New Mexico	10.0	6.7	11.1	6.8	16.7	15.3	62.2	71.2
North Dakota	13.5	12.5	12.7	5.2	23.0	30.4	50.8	51.9
Oklahoma	14.7	11.2	14.7	8.7	19.1	29.6	51.6	50.5
Oregon	10.2	6.3	12.4	6.3	10.9	14.1	66.4	73.3
South Dakota	14.3	10.2	13.4	7.5	23.5	21.4	48.7	60.9
Texas	12.2	7.8	7.8	6.6	27.8	19.7	52.2	66.0
Utah	8.1	10.9	11.4	5.3	14.1	22.8	66.5	61.0
Washington	8.5	7.2	13.2	3.4	12.4	13.5	66.0	75.8
Wyoming	11.3	7.1	13.0	6.2	18.9	18.5	56.8	68.2

Table A-97. Percent of respondents that are current hunters/anglers (H/A) and current non-hunters/anglers (Non-H/A) agreeing with the statement "I feel that my opinions are heard by fish and wildlife decision-makers in my state."

State	Strongly Disagree		Moderately Disagree		Slightly Disagree		Neither		Slightly Agree		Moderately Agree		Strongly Agree	
	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A
Alaska	10.6	21.0	11.0	6.4	11.8	9.3	25.2	25.6	23.6	20.6	13.4	11.4	4.3	5.7
Arizona	12.7	13.0	14.5	12.3	14.5	7.0	29.1	44.1	14.5	13.7	12.7	8.2	1.8	1.7
California	22.8	15.4	22.8	13.1	10.5	12.4	21.1	40.8	17.5	8.6	5.3	7.8	0.0	1.9
Colorado	13.6	10.0	12.1	10.5	13.6	8.3	27.1	46.6	22.1	15.0	9.3	9.0	2.1	0.6
Hawai`i	13.5	11.6	11.5	9.0	8.3	7.5	24.0	46.7	31.3	13.5	9.4	9.4	2.1	2.4
Idaho	16.8	9.6	16.4	12.7	12.3	8.5	20.5	42.9	22.8	16.3	9.0	8.3	2.2	1.7
Kansas	12.0	6.7	12.0	7.7	9.0	12.9	35.3	51.2	19.5	13.6	8.3	6.7	3.8	1.3
Montana	12.3	9.3	14.2	11.9	15.1	11.5	20.1	34.7	24.9	18.3	10.3	11.7	3.1	2.6
Nebraska	11.6	13.3	12.1	7.7	11.6	9.1	30.6	47.1	17.9	16.0	12.1	5.2	4.0	1.7
Nevada	16.9	11.4	14.5	9.1	8.4	9.3	34.9	47.8	13.3	14.9	9.6	6.2	2.4	1.4
New Mexico	15.9	16.5	15.9	10.3	15.4	13.2	20.3	34.5	18.7	16.2	10.4	6.7	3.3	2.6
North Dakota	5.3	8.5	10.9	8.0	10.9	9.2	25.9	44.4	25.5	20.6	15.0	6.1	6.5	3.2
Oklahoma	10.5	14.6	14.0	8.6	11.4	8.6	26.8	41.1	17.5	14.6	15.8	10.4	3.9	2.0
Oregon	17.1	11.7	17.9	14.3	9.3	8.2	28.6	38.4	12.9	15.2	12.9	9.9	1.4	2.2
South Dakota	12.6	7.5	11.8	13.3	11.0	11.1	25.2	43.9	24.0	14.8	11.4	7.5	4.1	1.9
Texas	14.9	15.0	13.8	10.7	9.6	10.9	25.5	44.7	21.3	10.9	10.6	6.9	4.3	1.0
Utah	15.6	12.5	14.0	12.3	12.9	10.8	27.4	43.0	20.4	13.5	8.1	7.0	1.6	1.0
Washington	17.0	12.4	15.2	13.1	15.2	13.1	29.5	40.5	12.5	15.0	9.8	4.1	0.9	1.7
Wyoming	12.4	10.7	14.1	7.3	12.4	12.3	19.9	35.6	20.6	18.8	17.0	12.3	3.6	3.0

Table A-98. Percent of respondents that are current hunters (H/A) and anglers and current non-hunters/anglers (Non-H/A) agreeing with the statement "I feel that my interests are adequately taken into account by fish and wildlife decision-makers in my state."

State	Strongly Disagree		Moderately Disagree		Slightly Disagree		Neither		Slightly Agree		Moderately Agree		Strongly Agree	
	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A
Alaska	10.6	15.8	15.4	16.1	10.2	11.1	19.7	17.9	23.6	19.4	16.5	13.3	3.9	6.5
Arizona	14.5	10.9	7.3	14.5	21.8	9.4	20.0	36.7	25.5	18.1	7.3	9.4	3.6	1.0
California	13.8	10.8	29.3	12.9	10.3	14.1	17.2	35.9	22.4	15.0	6.9	9.1	0.0	2.3
Colorado	11.6	7.0	11.6	9.2	15.9	10.7	23.9	41.2	23.9	19.8	10.9	10.7	2.9	1.5
Hawai`i	12.6	9.0	7.4	10.2	12.6	8.6	21.1	40.3	30.5	20.4	11.6	8.8	3.2	2.7
Idaho	15.3	7.2	17.5	15.6	14.9	9.9	16.4	38.3	22.8	17.6	11.2	10.2	1.9	1.1
Kansas	9.8	6.2	13.6	9.3	7.6	16.5	25.8	41.9	25.8	15.4	13.6	8.7	3.8	2.1
Montana	10.1	10.2	14.8	14.4	15.4	8.6	14.8	31.1	28.6	19.8	12.6	13.0	3.6	3.0
Nebraska	7.6	9.3	14.0	9.5	13.4	9.9	24.4	39.0	23.3	20.0	14.5	9.7	2.9	2.5
Nevada	12.3	8.9	16.0	9.9	17.3	11.2	23.5	35.8	17.3	24.4	12.3	9.3	1.2	0.6
New Mexico	13.8	13.1	14.9	12.8	18.2	15.1	14.9	29.4	22.7	18.4	11.6	8.4	3.9	2.7
North Dakota	6.0	5.5	8.4	8.4	12.4	11.3	21.7	38.7	28.9	23.6	17.7	10.1	4.8	2.4
Oklahoma	8.7	10.7	12.7	9.7	13.5	10.5	19.7	36.8	24.9	19.3	16.2	10.7	4.4	2.4
Oregon	15.8	11.2	16.5	15.2	10.8	12.1	23.7	28.4	17.3	21.8	14.4	9.9	1.4	1.3
South Dakota	11.0	6.0	11.4	12.4	12.2	12.8	20.4	37.1	27.3	19.8	14.3	9.6	3.3	2.3
Texas	10.9	10.5	14.1	15.7	8.7	12.8	23.9	35.2	21.7	14.0	15.2	10.5	5.4	1.4
Utah	15.0	10.0	13.9	14.7	11.8	12.2	21.4	37.3	26.2	16.9	10.7	7.2	1.1	1.7
Washington	14.4	9.7	16.2	12.8	18.9	15.2	24.3	32.9	16.2	22.9	9..0	6.0	0.9	0.5
Wyoming	9.2	9.3	16.4	9.3	14.5	14.1	15.8	31.7	25.3	21.6	16.1	11.7	2.6	2.2

Table A-99. Respondents that are current hunters/anglers (H/A) and current non-hunters/anglers (Non-H/A) that agreeing with the statement "I feel that if I provide input, it will make a difference in fish and wildlife decisions in my state."

State	Strongly Disagree		Moderately Disagree		Slightly Disagree		Neither		Slightly Agree		Moderately Agree		Strongly Agree	
	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A
Alaska	11.4	11.4	13.0	15.7	15.4	14.6	15.0	12.8	26.4	29.9	12.2	10.3	6.7	5.3
Arizona	10.9	9.6	7.3	14.7	20.0	14.2	16.4	24.3	27.3	25.5	12.7	9.1	5.5	2.6
California	19.0	11.0	20.7	12.4	12.1	16.7	15.5	13.9	22.4	31.4	5.2	10.5	5.2	4.0
Colorado	10.1	9.2	15.8	8.6	15.8	15.6	10.8	25.7	32.4	28.1	12.2	9.4	2.9	3.4
Hawai`i	12.4	9.6	11.3	11.3	17.5	16.0	11.3	23.6	26.8	25.4	14.4	10.5	6.2	3.5
Idaho	17.5	11.2	15.6	15.2	16.0	13.6	11.2	18.8	28.3	29.0	8.6	8.7	3.0	3.6
Kansas	10.6	5.9	9.8	11.6	12.9	19.1	16.7	24.8	27.3	26.1	15.9	9.8	6.8	2.6
Montana	12.0	8.9	14.0	12.2	14.3	18.5	11.5	16.6	31.1	28.2	13.4	12.6	3.6	3.0
Nebraska	6.9	7.4	13.3	8.5	16.8	17.3	19.1	26.6	27.2	27.0	12.7	9.7	4.0	3.5
Nevada	9.9	8.7	13.6	10.2	18.5	14.1	13.6	22.5	29.6	31.6	12.3	9.4	2.5	3.5
New Mexico	14.3	12.7	12.1	11.1	19.2	13.6	13.7	19.7	23.1	26.1	12.1	11.4	5.5	5.5
North Dakota	6.5	7.3	9.3	9.2	12.1	12.8	18.1	28.3	31.9	26.9	15.7	13.3	6.5	2.2
Oklahoma	8.8	9.6	12.7	14.2	19.3	12.8	13.6	22.8	26.3	25.8	15.4	10.2	3.9	4.6
Oregon	16.5	12.3	12.9	17.0	14.4	13.2	15.8	17.6	25.9	27.3	10.1	9.0	4.3	3.5
South Dakota	7.3	9.0	13.9	10.3	15.5	17.6	14.3	21.0	33.1	29.3	12.2	10.1	3.7	2.8
Texas	8.6	10.4	12.9	11.8	9.7	11.8	16.1	22.4	34.4	28.3	11.8	12.3	6.5	3.1
Utah	15.6	9.4	14.5	15.6	16.7	18.1	14.0	22.5	28.5	27.0	9.1	5.7	1.6	1.7
Washington	10.8	8.9	18.0	17.5	18.9	18.2	13.5	19.9	27.9	27.1	9.9	6.5	0.9	1.9
Wyoming	13.3	8.9	10.4	10.3	16.2	15.8	12.7	22.7	30.2	28.4	14.0	10.8	3.2	3.0

Table A-100. Respondents that are current hunters/anglers (H/A) and current non-hunters/anglers (Non-H/A) agreeing with the statement "I feel that my state fish and wildlife agency makes a good effort to obtain input from the public as a whole."

State	Strongly Disagree		Moderately Disagree		Slightly Disagree		Neither		Slightly Agree		Moderately Agree		Strongly Agree	
	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A
Alaska	8.7	8.9	8.7	8.5	10.3	8.2	12.3	13.9	28.6	31.3	21.8	19.2	9.5	10.0
Arizona	11.1	7.7	7.4	13.2	16.7	12.5	20.4	28.1	25.9	22.1	13.0	13.5	5.6	2.9
California	20.3	8.7	16.9	13.5	15.3	14.2	18.6	30.9	15.3	19.0	10.2	11.2	3.4	2.5
Colorado	7.1	7.9	9.3	9.2	17.9	11.5	19.3	29.9	24.3	24.1	18.6	14.5	3.6	3.0
Hawai`i	11.3	8.1	10.3	9.8	22.7	18.5	11.3	23.0	22.7	23.0	16.5	12.8	5.2	4.9
Idaho	12.7	7.2	10.1	9.4	17.2	14.9	13.1	23.0	25.0	26.4	18.3	15.3	3.7	3.8
Kansas	9.2	7.0	8.4	11.6	15.3	12.9	16.0	31.3	30.5	23.0	14.5	11.1	6.1	3.1
Montana	8.9	6.1	12.0	10.5	9.5	11.7	10.1	14.8	26.0	28.1	24.6	20.4	8.9	8.5
Nebraska	10.5	7.4	11.6	9.1	13.4	9.3	18.6	30.4	25.0	25.2	16.9	14.5	4.1	4.1
Nevada	12.3	7.3	16.0	10.0	16.0	13.7	13.6	28.8	22.2	23.4	17.3	14.7	2.5	2.1
New Mexico	12.8	13.0	13.3	9.7	16.7	13.5	13.3	22.1	25.6	22.7	15.0	14.6	3.3	4.4
North Dakota	5.2	5.1	4.4	7.7	13.7	11.1	14.9	19.8	29.8	31.2	21.4	21.0	10.5	4.1
Oklahoma	9.2	10.0	14.0	11.2	12.2	12.7	15.3	28.9	25.3	19.7	17.5	13.7	6.6	3.8
Oregon	11.5	9.1	16.5	14.1	15.1	13.0	14.4	23.2	23.0	19.6	14.4	16.6	5.0	4.4
South Dakota	8.9	4.5	9.3	11.1	15.0	12.2	13.0	22.9	23.9	27.8	22.3	17.1	7.7	4.3
Texas	9.9	13.3	14.3	10.9	12.1	14.2	18.7	29.9	23.1	21.1	14.3	8.3	7.7	2.4
Utah	10.8	6.2	12.9	15.5	18.3	16.2	12.9	24.9	24.7	24.2	14.5	11.0	5.9	2.0
Washington	11.8	8.4	17.3	11.6	18.2	19.8	18.2	24.3	18.2	25.3	14.5	8.4	1.8	2.2
Wyoming	6.2	5.7	9.8	7.5	13.1	13.0	9.5	18.2	26.5	28.1	26.8	17.4	8.2	10.1

Table A-101. Respondents that are current hunters/anglers (H/A) and current non-hunters/anglers (Non-H/A) agreeing with the statement "I don't have an interest in providing input to fish and wildlife decisions in my state."

State	Strongly Disagree		Moderately Disagree		Slightly Disagree		Neither		Slightly Agree		Moderately Agree		Strongly Agree	
	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A
Alaska	32.2	23.5	23.5	11.2	16.9	24.2	12.2	14.7	9.8	15.4	3.1	7.0	2.4	3.9
Arizona	32.7	17.7	20.0	14.6	21.8	20.8	12.7	16.3	5.5	15.6	3.6	8.1	3.6	6.9
California	40.7	22.4	20.3	19.2	13.6	16.9	8.5	11.8	11.9	16.5	3.4	7.2	1.7	5.9
Colorado	39.6	22.8	21.6	15.1	22.3	20.6	6.5	13.8	4.3	15.5	5.0	7.9	0.7	4.3
Hawai`i	29.5	15.7	24.2	10.8	20.0	20.9	10.5	22.1	10.5	15.7	3.2	9.2	2.1	5.7
Idaho	35.4	11.5	26.5	16.0	16.8	20.0	8.2	23.2	6.3	14.2	4.5	8.7	2.2	6.4
Kansas	28.2	10.6	26.0	14.4	22.1	25.0	12.2	19.6	4.6	17.3	5.3	7.0	1.5	6.2
Montana	37.6	21.8	24.4	17.9	16.6	16.7	8.4	16.5	6.5	11.4	3.1	12.2	3.4	3.5
Nebraska	30.2	12.8	23.8	15.5	17.4	19.9	11.0	15.9	8.7	14.3	5.8	12.2	2.9	9.3
Nevada	39.8	20.3	25.3	15.9	14.5	17.2	8.4	19.2	3.6	13.8	4.8	6.2	3.6	7.4
New Mexico	45.3	22.0	22.7	21.5	14.4	18.6	6.6	15.5	6.6	10.5	2.2	7.3	2.2	4.6
North Dakota	24.2	9.6	21.8	8.9	23.4	18.2	14.5	25.6	8.5	18.4	4.4	11.0	3.2	8.4
Oklahoma	31.4	13.3	21.8	14.5	18.8	13.7	8.7	20.7	9.6	17.3	4.8	12.0	4.8	8.4
Oregon	36.2	18.0	26.2	16.0	14.2	27.0	10.6	14.3	5.7	11.8	5.0	7.7	2.1	5.3
South Dakota	24.9	9.6	24.9	13.2	20.4	21.5	13.1	19.0	8.2	17.3	5.7	9.6	2.9	9.8
Texas	30.8	18.0	22.0	18.5	23.1	18.5	14.3	17.3	4.4	14.2	2.2	8.8	3.3	4.7
Utah	33.5	15.3	20.5	13.3	20.0	20.5	9.2	19.0	9.7	15.3	5.4	10.0	1.6	6.8
Washington	35.7	20.2	23.2	20.0	12.5	19.0	14.3	16.6	8.9	12.0	4.5	8.9	0.9	3.1
Wyoming	33.7	13.1	25.2	13.5	17.6	24.6	10.8	19.2	6.9	13.7	3.3	8.3	2.6	7.5

Table A-102. Respondents that are current hunters/anglers (H/A) and current non-hunters/anglers (Non-H/A) agreeing with the statement "I trust my state fish and wildlife agency to make good decisions without my input."

State	Strongly Disagree		Moderately Disagree		Slightly Disagree		Neither		Slightly Agree		Moderately Agree		Strongly Agree	
	H/A	Non H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A
Alaska	15.0	21.8	18.6	10.9	13.4	15.5	10.3	13.4	24.5	20.1	12.6	15.1	5.5	3.2
Arizona	14.5	14.1	10.9	10.8	16.4	12.7	16.4	13.7	14.5	22.8	21.8	15.8	5.5	10.1
California	26.3	14.1	12.3	13.9	19.3	18.9	10.5	11.8	21.1	19.4	8.8	13.9	1.8	8.0
Colorado	14.9	9.2	15.6	11.3	19.1	15.1	7.8	17.5	24.1	23.2	16.3	14.7	2.1	9.0
Hawai`i	20.0	9.0	15.8	9.2	16.8	12.2	13.7	19.6	15.8	22.5	11.6	17.1	6.3	10.4
Idaho	22.3	12.6	15.2	11.3	17.5	14.5	11.5	17.3	19.0	21.1	10.8	15.6	3.7	7.7
Kansas	11.3	4.9	9.8	8.2	12.8	19.3	16.5	17.0	27.1	23.7	16.5	18.3	6.0	8.7
Montana	17.6	13.8	16.2	12.4	17.6	17.9	10.9	12.8	19.6	22.0	12.6	15.1	5.6	6.1
Nebraska	10.4	5.8	11.0	7.4	15.0	12.1	11.6	13.8	24.9	26.3	17.9	21.8	9.2	12.8
Nevada	19.5	11.6	13.4	9.1	13.4	13.9	14.6	17.2	19.5	20.9	15.9	19.0	3.7	8.3
New Mexico	19.9	16.6	17.7	13.2	19.3	16.7	9.4	15.7	18.2	19.0	11.6	12.0	3.9	6.7
North Dakota	9.3	4.3	7.7	6.7	14.9	6.7	12.9	18.2	27.4	22.8	18.5	27.3	9.3	13.9
Oklahoma	10.9	7.4	10.9	11.2	12.6	9.8	7.8	15.8	27.4	21.6	20.4	24.0	10.0	10.4
Oregon	19.1	14.4	15.6	12.6	13.5	21.7	17.7	10.2	15.6	21.5	14.2	14.2	4.3	5.5
South Dakota	13.9	6.0	15.2	7.2	14.8	11.5	9.0	12.4	21.7	29.9	19.7	20.5	5.7	12.6
Texas	8.7	11.5	13.0	10.4	16.3	12.7	17.4	17.4	23.9	23.3	15.2	19.8	5.4	4.9
Utah	16.1	10.4	10.2	10.4	16.7	15.4	8.1	16.4	26.3	24.4	16.7	15.2	5.9	7.7
Washington	19.8	10.3	11.7	13.0	20.7	19.7	11.7	18.0	21.6	25.7	9.0	9.6	5.4	3.6
Wyoming	14.7	8.2	14.0	6.4	16.3	14.9	10.1	18.5	22.8	20.1	16.6	21.3	5.5	10.5

Table A-103. Respondents that are current hunters/anglers (H/A) and current non-hunters/anglers (Non-H/A) that trust their federal government to do what is right for the country.

State	Almost never		Only some of the time		Most of the time		Almost always	
	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A
Alaska	13.6	11.4	42.0	50.5	38.9	31.3	5.4	6.8
Arizona	10.5	9.9	42.1	44.9	38.6	39.0	8.8	6.1
California	13.3	17.3	48.3	46.3	33.3	29.4	5.0	6.9
Colorado	13.4	11.0	45.8	50.4	34.5	33.2	6.3	5.4
Hawai`i	13.5	9.3	45.8	43.6	38.5	40.7	2.1	6.4
Idaho	11.6	12.4	42.5	42.7	41.4	39.5	4.5	5.3
Kansas	12.1	6.9	40.2	44.5	43.2	42.7	4.5	5.9
Montana	12.6	10.3	40.2	53.2	40.8	32.5	6.4	4.0
Nebraska	7.4	9.2	36.0	43.9	48.6	41.6	8.0	5.2
Nevada	13.3	11.7	42.2	43.7	38.6	37.9	6.0	6.7
New Mexico	9.3	16.3	41.0	45.0	43.7	33.0	6.0	5.7
North Dakota	5.6	9.0	41.7	39.9	46.8	43.2	6.0	8.0
Oklahoma	9.5	7.4	40.3	40.7	43.7	47.7	6.5	4.2
Oregon	10.7	23.5	54.3	48.6	32.1	24.2	2.9	3.7
South Dakota	5.2	9.0	44.0	42.3	46.0	42.3	4.8	6.4
Texas	6.6	12.0	37.4	41.3	47.3	42.3	8.8	4.4
Utah	4.9	7.4	38.9	41.1	49.7	46.8	6.5	4.7
Washington	8.8	15.5	48.2	54.0	39.5	28.1	3.5	2.4
Wyoming	9.4	9.9	46.9	45.7	39.5	39.5	4.2	4.9

Table A-104. Respondents that are current hunters/anglers (H/A) and current non-hunters/anglers (Non-H/A) that trust their state government to do what is right for the state.

State	Almost never		Only some of the time		Most of the time		Almost always	
	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A
Alaska	10.9	12.1	44.0	48.0	41.2	32.7	3.9	7.1
Arizona	8.9	5.2	55.4	45.7	32.1	44.5	3.6	4.5
California	13.6	10.2	59.3	50.6	25.4	36.0	1.7	3.1
Colorado	5.6	6.5	48.6	43.8	42.3	44.7	3.5	5.0
Hawai`i	12.5	5.4	42.7	51.7	41.7	38.8	3.1	4.1
Idaho	5.2	7.5	37.5	33.6	53.2	51.3	4.1	7.5
Kansas	7.5	4.1	43.6	43.1	45.9	48.2	3.0	4.6
Montana	7.5	6.2	43.5	49.6	44.3	41.7	4.7	2.6
Nebraska	4.6	4.2	36.2	37.0	52.9	55.0	6.3	3.8
Nevada	8.4	5.8	39.8	42.0	47.0	45.9	4.8	6.3
New Mexico	7.7	10.9	51.4	53.9	35.5	32.0	5.5	3.2
North Dakota	2.4	3.3	27.4	28.5	59.9	57.8	10.3	10.4
Oklahoma	8.7	8.4	38.5	41.3	48.9	46.9	3.9	3.4
Oregon	10.1	9.3	51.8	44.9	36.7	42.3	1.4	3.5
South Dakota	2.4	3.6	27.4	26.5	63.3	62.8	6.9	7.1
Texas	4.4	8.1	31.9	46.3	53.8	42.2	9.9	3.5
Utah	4.3	5.7	31.4	31.9	54.1	54.7	10.3	7.7
Washington	7.0	3.4	47.8	53.6	42.6	41.3	2.6	1.7
Wyoming	3.9	4.3	33.1	32.8	57.5	56.0	5.5	6.9

Table A-105. Respondents that are current hunters/anglers (H/A) and current non-hunters/anglers (Non-H/A) that trust their state fish and wildlife agency to do what is right for fish and wildlife management.

State	Almost never		Only some of the time		Most of the time		Almost always	
	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A
Alaska	5.8	6.4	31.9	33.2	51.4	46.3	10.9	14.1
Arizona	5.3	4.1	29.8	30.8	50.9	55.4	14.0	9.8
California	6.8	5.7	44.1	39.0	44.1	49.6	5.1	5.7
Colorado	2.1	2.3	26.8	26.7	62.0	61.2	9.2	9.8
Hawai`i	6.3	3.9	34.4	34.3	51.0	52.8	8.3	9.1
Idaho	6.4	5.1	34.6	29.8	52.3	56.6	6.8	8.5
Kansas	3.0	2.3	18.0	29.8	62.4	58.0	16.5	9.9
Montana	4.5	4.4	29.2	29.8	54.3	55.0	12.0	10.9
Nebraska	2.9	2.7	22.0	23.5	59.5	62.9	15.6	10.9
Nevada	4.8	3.1	33.7	29.7	53.0	58.2	8.4	9.0
New Mexico	5.5	6.0	36.3	38.5	48.4	48.3	9.9	7.2
North Dakota	1.6	2.1	17.0	17.0	62.8	63.6	18.6	17.3
Oklahoma	3.0	4.0	21.6	25.9	57.1	57.0	18.2	13.1
Oregon	6.4	2.4	37.9	38.7	47.1	49.3	8.6	9.5
South Dakota	4.0	3.0	21.7	22.5	57.8	60.4	16.5	14.1
Texas	3.3	4.4	19.6	31.3	55.4	53.9	21.7	10.4
Utah	8.1	4.0	26.5	27.9	53.5	59.5	11.9	8.6
Washington	6.2	3.4	39.8	39.3	47.8	54.9	6.2	2.4
Wyoming	2.9	3.4	25.2	26.0	57.6	57.4	14.2	13.2

Table A-106. Respondents that are current hunters/anglers (H/A) and current non-hunters/anglers (Non-H/A) agreeing with actions to address bear situation 1[1].

State	Do nothing		Provide more hunting		Conduct controlled hunts	
	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A
Alaska	23.4	22.2	70.0	54.2	61.2	67.3
Arizona	20.0	21.3	62.5	37.2	69.1	70.8
California	28.8	29.3	50.8	29.6	56.7	66.3
Colorado	28.9	25.3	61.0	39.2	62.7	68.0
Hawai`i	12.8	18.9	42.6	30.1	75.5	71.4
Idaho	15.0	15.1	76.4	59.1	59.2	72.6
Kansas	15.9	18.9	67.4	40.6	71.8	76.8
Montana	19.0	17.4	76.5	57.6	54.9	66.9
Nebraska	16.8	16.3	72.7	45.3	81.8	80.8
Nevada	19.5	22.4	60.2	37.1	64.6	67.5
New Mexico	15.6	22.9	63.0	41.6	63.3	63.4
North Dakota	10.4	10.2	78.3	60.2	76.0	84.6
Oklahoma	13.4	14.3	66.5	45.1	85.7	79.1
Oregon	16.7	25.2	71.1	44.5	67.6	68.8
South Dakota	10.0	14.8	74.1	54.1	74.9	84.5
Texas	9.8	17.0	64.8	36.3	82.2	78.5
Utah	15.3	18.2	68.1	43.1	66.3	70.0
Washington	20.4	20.6	66.4	36.2	67.3	68.2
Wyoming	11.4	14.3	79.7	55.9	65.8	71.7

[1]Bears wandering into areas where humans live in search of food. Bears are getting into trash and pet food containers.

Table A-107. Respondents that are current hunters/anglers (H/A) and current non-hunters/anglers (Non-H/A) agreeing with actions to address bear situation 2[1].

State	Do nothing		Provide more hunting		Conduct controlled hunts	
	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A
Alaska	10.2	10.6	74.5	64.1	78.7	82.4
Arizona	10.9	6.8	70.9	46.3	83.6	84.9
California	13.6	13.4	62.7	37.6	78.0	81.3
Colorado	8.5	7.6	67.1	46.4	84.3	85.2
Hawai`i	11.5	8.7	53.7	40.6	85.4	89.4
Idaho	7.5	6.8	79.2	66.3	78.9	88.1
Kansas	6.1	8.7	75.8	50.5	85.5	89.2
Montana	7.6	10.1	83.2	67.5	78.9	84.4
Nebraska	8.2	5.5	79.1	57.4	91.8	92.1
Nevada	6.2	9.6	63.0	45.4	85.4	81.1
New Mexico	8.4	11.5	69.8	51.4	83.2	79.5
North Dakota	5.2	4.7	83.3	65.7	92.3	91.4
Oklahoma	4.8	4.6	71.9	54.3	91.3	90.7
Oregon	6.6	10.4	74.3	51.5	83.9	87.9
South Dakota	4.5	8.6	81.2	64.4	87.4	91.5
Texas	4.4	9.6	68.1	48.0	88.9	86.2
Utah	7.2	6.5	73.5	56.5	83.2	85.6
Washington	8.0	7.7	70.0	43.7	82.9	83.9
Wyoming	7.5	7.3	82.0	62.9	82.7	84.6

[1]Bears are wandering into areas where humans live in search of food. Human deaths from bear attacks have occurred.

Table A-108. Respondents that are current hunters/anglers (H/A) and current non-hunters/anglers (Non-H/A) agreeing with actions to address deer situation 1[1].

State	Do nothing		Provide more hunting		Conduct controlled hunts		Permanent contraceptives		Short-term contraceptives	
	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A
Alaska	36.9	39.9	87.7	70.8	54.6	63.2	12.7	9.4	44.7	51.6
Arizona	28.6	28.8	85.7	62.8	65.5	68.0	10.7	20.0	42.9	65.5
California	37.3	41.6	66.1	48.2	64.4	62.9	20.3	21.2	54.2	74.4
Colorado	38.7	35.9	83.2	65.1	61.3	67.6	14.2	17.0	54.2	67.7
Hawai`i	27.7	27.5	72.3	53.7	73.1	75.1	19.1	20.7	60.6	72.0
Idaho	29.9	26.8	87.3	75.0	49.8	68.7	6.4	11.0	35.2	50.6
Kansas	27.3	24.1	81.2	71.5	67.2	76.2	14.4	20.8	56.1	71.4
Montana	29.2	30.8	89.4	80.1	53.2	64.9	13.2	17.9	38.0	59.3
Nebraska	22.0	20.7	87.8	73.1	73.1	80.8	15.2	22.4	57.3	71.8
Nevada	30.5	32.7	74.1	58.9	62.2	67.4	13.4	19.3	54.2	59.8
New Mexico	26.8	32.1	84.6	63.1	62.8	62.6	6.7	15.0	43.9	58.9
North Dakota	16.5	17.1	92.3	81.7	65.4	71.9	11.2	21.0	48.4	66.0
Oklahoma	20.3	20.2	87.6	71.5	75.5	75.1	8.6	15.5	46.8	71.7
Oregon	32.6	50.8	84.9	65.4	56.5	64.1	8.6	13.6	37.9	60.4
South Dakota	16.7	22.6	90.8	79.6	68.8	74.0	14.5	20.5	52.6	67.2
Texas	18.5	24.9	84.6	62.2	79.1	77.8	13.2	19.9	62.0	71.4
Utah	35.5	36.7	82.5	64.1	56.4	69.3	7.6	12.9	38.6	58.3
Washington	39.3	44.7	79.6	57.4	54.5	66.0	13.3	15.0	44.2	70.0
Wyoming	24.5	29.4	91.6	81.9	58.9	65.4	10.2	14.5	45.6	56.4

[1]Deer numbers are increasing. There are complaints about deer entering people's yards and eating shrubs and garden plants.

Table A-109. Respondents that are current hunters/anglers (H/A) and current non-hunters/anglers (Non-H/A) agreeing with actions to address deer situation 2[1].

State	Do nothing		Provide more hunting		Conduct controlled hunts		Permanent contraceptives		Short-term contraceptives	
	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A	H/A	Non-H/A
Alaska	11.2	12.0	83.8	69.9	76.9	84.5	28.1	23.1	58.4	61.5
Arizona	11.1	9.3	85.7	62.7	81.5	84.1	25.9	29.9	55.6	72.2
California	17.2	15.6	70.7	55.7	77.2	82.4	26.3	29.2	62.1	78.8
Colorado	7.8	12.6	83.9	65.9	80.1	85.4	26.4	35.3	66.0	75.9
Hawai`i	13.7	10.8	77.7	59.3	86.0	87.1	29.8	34.4	68.1	81.1
Idaho	8.7	9.1	87.5	76.2	73.3	83.2	17.2	25.6	50.4	64.6
Kansas	6.1	10.5	88.5	72.5	84.8	88.9	29.8	30.2	69.5	76.0
Montana	9.3	10.6	89.6	79.6	75.4	79.3	26.7	30.9	53.0	71.0
Nebraska	5.9	4.5	84.8	79.2	86.0	91.8	31.2	37.6	69.8	77.4
Nevada	8.6	13.3	76.5	59.0	81.5	81.8	23.8	34.3	61.3	68.9
New Mexico	9.5	12.5	82.2	66.4	80.0	81.7	22.5	24.5	57.5	68.3
North Dakota	4.9	5.6	86.6	78.8	84.6	83.1	25.2	34.0	62.2	72.7
Oklahoma	5.3	8.8	86.8	71.2	88.9	87.5	22.0	27.6	58.3	76.6
Oregon	8.9	18.2	83.7	64.1	79.3	81.6	20.1	29.3	54.8	67.8
South Dakota	4.9	8.3	91.0	77.1	85.7	84.8	27.8	34.6	65.7	75.1
Texas	4.4	8.7	78.9	63.0	87.8	87.0	30.3	29.7	68.9	76.0
Utah	10.0	10.5	82.9	67.9	78.7	85.3	25.8	32.8	53.9	66.3
Washington	10.8	15.0	80.2	57.1	80.9	81.1	27.9	26.9	56.8	78.6
Wyoming	8.6	10.8	88.3	79.6	76.6	79.5	28.0	30.0	58.6	66.3

[1]Deer numbers are increasing. Authorities are concerned because deer are carrying a disease that is transmissible to some domestic animals and livestock.

Table A-110. Distribution of current participation and latent demand[1] for wildlife-related recreation by state represented by percentages.

State	Fishing		Hunting		Wildlife viewing	
	Current participation	Latent demand	Current participation	Latent demand	Current participation	Latent demand
Alaska	44.0	44.3	16.6	43.2	45.8	42.0
Arizona	10.7	49.5	3.3	24.3	28.8	52.6
California	10.3	47.7	1.5	20.7	25.6	58.7
Colorado	20.4	45.8	6.2	26.4	42.1	42.8
Hawai`i	14.7	45.0	3.7	19.9	25.0	49.3
Idaho	27.8	49.8	17.1	32.9	41.6	45.8
Kansas	22.3	39.5	10.7	24.3	30.6	47.3
Montana	32.5	43.1	25.7	30.3	45.9	38.1
Nebraska	23.2	40.9	11.0	26.2	30.7	49.0
Nevada	12.7	50.5	3.3	27.6	27.9	55.0
New Mexico	18.3	48.4	10.0	28.7	38.4	48.7
North Dakota	30.3	32.6	19.8	23.5	24.6	47.0
Oklahoma	29.2	37.1	11.0	29.5	24.6	49.4
Oregon	21.3	41.7	9.0	22.5	36.3	49.3
South Dakota	28.9	39.0	17.8	29.4	29.3	48.7
Texas	15.5	47.5	7.0	29.1	27.3	50.3
Utah	28.4	41.0	12.1	27.7	37.8	45.8
Washington	20.4	41.4	5.4	22.1	35.8	51.2
Wyoming	34.3	44.3	18.5	32.8	47.5	40.4

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-111. Gender distribution for current participation and latent angler demand[1] groups by state represented by percentages.

State	Current participation		Latent demand	
	Males	Females	Males	Females
Alaska	59.1	40.9	45.0	55.0
Arizona	70.6	29.4	53.9	46.1
California	81.0	19.0	55.3	44.7
Colorado	71.5	28.5	49.1	50.9
Hawai`i	70.3	29.7	50.2	49.8
Idaho	73.3	26.7	49.4	50.6
Kansas	63.0	37.0	50.7	49.3
Montana	69.6	30.4	49.7	50.3
Nebraska	72.1	27.9	56.3	43.8
Nevada	72.7	27.3	58.4	41.6
New Mexico	71.8	28.2	53.0	47.0
North Dakota	64.3	35.7	50.2	49.8
Oklahoma	64.4	35.6	48.0	52.0
Oregon	78.3	21.7	44.4	55.6
South Dakota	68.9	31.1	48.3	51.7
Texas	74.7	25.3	53.0	47.0
Utah	74.0	26.0	59.6	40.4
Washington	70.3	29.7	52.0	48.0
Wyoming	68.3	31.7	44.0	56.0

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-112. Gender distribution for current participation and latent hunter demand[1] groups by state represented by percentages.

State	Current participation		Latent demand	
	Males	Females	Males	Females
Alaska	79.8	20.2	62.3	37.7
Arizona	93.8	6.3	66.9	33.1
California	87.5	12.5	79.6	20.4
Colorado	84.2	15.8	71.1	28.9
Hawai`i	69.6	30.4	71.3	28.7
Idaho	89.2	10.8	59.2	40.8
Kansas	84.2	15.8	64.6	35.4
Montana	77.9	22.1	56.8	43.2
Nebraska	86.5	13.5	71.5	28.5
Nevada	89.5	10.5	71.3	28.7
New Mexico	88.1	11.9	63.3	36.7
North Dakota	73.7	26.3	63.0	37.0
Oklahoma	85.2	14.8	60.6	39.4
Oregon	90.7	9.3	64.2	35.8
South Dakota	88.5	11.5	52.8	47.2
Texas	86.5	13.5	70.3	29.7
Utah	90.3	9.7	70.6	29.4
Washington	78.6	21.4	72.9	27.1
Wyoming	79.2	20.8	61.4	38.6

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-113. Gender distribution for current participation and latent wildlife viewer demand[1] groups by state represented by percentages.

State	Current participation		Latent demand	
	Males	Females	Males	Females
Alaska	44.8	55.2	54.5	45.5
Arizona	47.1	52.9	43.5	56.5
California	44.7	55.3	52.6	47.4
Colorado	46.3	53.7	53.5	46.5
Hawai`i	50.0	50.0	50.0	50.0
Idaho	55.3	44.7	47.0	53.0
Kansas	54.0	46.0	45.8	54.2
Montana	49.1	50.9	61.2	38.8
Nebraska	55.1	44.9	53.4	46.6
Nevada	50.6	49.4	50.1	49.9
New Mexico	51.2	48.8	48.8	51.2
North Dakota	45.9	54.1	53.7	46.3
Oklahoma	47.5	52.5	47.0	53.0
Oregon	43.6	56.4	45.6	54.4
South Dakota	46.3	53.7	50.7	49.3
Texas	56.8	43.2	49.1	50.9
Utah	59.7	40.3	55.2	44.8
Washington	52.1	47.9	49.6	50.4
Wyoming	52.1	47.9	48.6	51.4

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-114. Average age for current participation and latent angler demand[1] groups by state.

State	Current participation		Latent demand	
	Mean	Std. deviation	Mean	Std. deviation
Alaska	41.91	13.12	46.19	14.29
Arizona	43.94	16.20	45.71	15.57
California	44.66	14.21	42.24	17.14
Colorado	43.49	13.89	45.52	15.08
Hawai`i	43.55	13.22	45.73	16.91
Idaho	44.46	14.99	45.89	17.60
Kansas	42.98	14.49	45.65	16.96
Montana	44.12	14.40	47.80	16.69
Nebraska	42.55	14.90	47.68	16.17
Nevada	45.00	14.23	44.90	14.50
New Mexico	44.08	14.48	46.24	16.16
North Dakota	41.97	14.88	45.67	17.32
Oklahoma	42.20	14.08	44.83	16.32
Oregon	46.97	14.92	47.21	17.46
South Dakota	41.21	14.41	47.19	16.93
Texas	43.49	14.77	44.84	14.80
Utah	41.75	14.28	41.58	14.73
Washington	45.59	15.46	45.53	15.77
Wyoming	43.61	14.36	46.73	16.53

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-115. Average age for current participation and latent hunter demand[1] groups by state.

State	Current participation		Latent demand	
	Mean	Std. deviation	Mean	Std. deviation
Alaska	43.55	13.11	43.66	14.73
Arizona	43.27	14.59	44.95	16.74
California	46.18	17.25	45.65	17.52
Colorado	44.45	13.14	44.89	14.71
Hawai`i	39.53	13.46	46.11	15.39
Idaho	42.72	14.02	45.34	17.19
Kansas	42.52	13.64	46.68	16.57
Montana	43.16	14.04	47.33	16.91
Nebraska	42.02	13.67	47.27	15.35
Nevada	44.37	14.87	44.57	15.10
New Mexico	42.46	14.22	46.54	16.88
North Dakota	42.23	14.19	42.07	15.48
Oklahoma	41.83	13.43	44.51	15.20
Oregon	47.21	15.11	48.93	17.25
South Dakota	41.92	13.79	48.27	17.90
Texas	44.35	15.33	43.90	14.51
Utah	40.20	11.39	42.17	15.25
Washington	45.16	14.22	46.88	15.87
Wyoming	42.52	13.89	47.27	15.83

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-116. Average age for current participation and latent wildlife viewer demand[1] groups by state.

State	Current participation		Latent demand	
	Mean	Std. deviation	Mean	Std. deviation
Alaska	43.14	12.45	44.40	14.60
Arizona	45.64	13.72	46.48	16.75
California	43.25	14.20	45.00	17.28
Colorado	44.05	13.06	47.04	15.40
Hawai`i	42.70	13.69	47.34	16.38
Idaho	44.78	15.47	45.51	17.56
Kansas	42.60	14.73	45.98	16.24
Montana	45.11	14.08	48.18	17.33
Nebraska	44.22	15.22	46.18	15.92
Nevada	44.15	14.12	45.00	14.51
New Mexico	44.11	14.59	46.58	16.28
North Dakota	43.71	15.84	44.89	16.57
Oklahoma	42.72	15.60	44.53	15.66
Oregon	45.07	13.83	47.10	17.49
South Dakota	42.07	13.94	46.27	16.68
Texas	44.42	14.71	44.38	15.22
Utah	40.63	13.43	42.77	15.62
Washington	46.19	15.04	44.96	15.64
Wyoming	45.24	15.00	46.76	16.03

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-117. Average number of children for current participation and latent angler demand[1] groups by state.

State	Current participation		Latent demand	
	Mean	Std. deviation	Mean	Std. deviation
Alaska	0.80	1.16	0.79	1.10
Arizona	0.98	1.24	0.82	1.28
California	0.92	1.26	0.63	1.22
Colorado	0.83	1.15	0.75	1.18
Hawai`i	0.86	1.10	0.73	1.01
Idaho	1.14	1.44	0.84	1.28
Kansas	0.91	1.21	0.83	1.15
Montana	0.86	1.14	0.66	1.06
Nebraska	1.02	1.22	0.76	0.98
Nevada	0.68	1.11	0.81	1.10
New Mexico	0.87	1.08	0.75	1.13
North Dakota	0.89	1.16	0.52	0.97
Oklahoma	1.05	1.17	0.75	1.10
Oregon	0.78	1.08	0.54	0.93
South Dakota	1.05	1.18	0.77	1.11
Texas	1.09	1.43	0.78	1.00
Utah	1.65	1.60	1.28	1.49
Washington	0.82	1.10	0.79	1.15
Wyoming	1.07	1.36	0.68	0.99

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-118. Average number of children for current participation and latent hunter demand[1] groups by state.

State	Current participation		Latent demand	
	Mean	Std. deviation	Mean	Std. deviation
Alaska	1.00	1.28	0.82	1.09
Arizona	0.96	1.26	0.90	1.47
California	0.79	1.31	0.78	1.16
Colorado	0.84	1.04	0.89	1.36
Hawai`i	1.35	1.22	0.78	1.05
Idaho	1.12	1.38	0.97	1.38
Kansas	0.89	1.10	0.90	1.28
Montana	0.97	1.15	0.65	1.07
Nebraska	1.04	1.16	0.76	1.01
Nevada	0.79	1.16	0.87	1.15
New Mexico	1.00	1.18	0.85	1.20
North Dakota	0.89	1.18	0.61	1.01
Oklahoma	1.05	1.19	0.94	1.28
Oregon	0.82	1.09	0.64	1.07
South Dakota	1.00	1.15	0.86	1.08
Texas	1.09	1.39	0.89	1.21
Utah	1.71	1.68	1.38	1.53
Washington	0.79	1.05	1.00	1.32
Wyoming	1.16	1.43	0.85	1.16

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-119. Average number of children for current participation and latent wildlife viewer demand[1] groups by state.

State	Current participation		Latent demand	
	Mean	Std. deviation	Mean	Std. deviation
Alaska	0.78	1.14	0.77	1.09
Arizona	0.77	1.24	0.83	1.17
California	0.55	1.00	0.66	1.23
Colorado	0.70	1.15	0.73	1.07
Hawai`i	0.82	1.02	0.75	1.04
Idaho	0.94	1.42	0.99	1.31
Kansas	0.71	1.06	0.80	1.16
Montana	0.65	1.02	0.73	1.04
Nebraska	0.80	1.15	0.83	1.03
Nevada	0.79	1.20	0.78	1.05
New Mexico	0.78	1.17	0.66	0.97
North Dakota	0.67	1.06	0.62	1.03
Oklahoma	0.84	1.11	0.83	1.14
Oregon	0.50	0.88	0.63	0.98
South Dakota	0.81	1.05	0.88	1.22
Texas	0.78	1.10	0.69	1.04
Utah	1.27	1.45	1.28	1.46
Washington	0.71	1.08	0.73	1.11
Wyoming	0.94	1.25	0.73	1.14

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-120. Education distribution for current participation and latent angler demand[1] by state represented by percentages.

State	Current participation					Latent demand				
	Less than high school diploma	High School diploma or GED	2 year associate degree or trade school	4 year college degree	Advanced degree	Less than high school diploma	High School diploma or GED	2 year associate degree or trade school	4 year college degree	Advanced degree
Alaska	0.4	25.5	24.3	31.9	17.9	3.4	24.9	25.8	24.9	21.0
Arizona	4.0	30.0	16.0	26.0	24.0	2.5	24.7	22.2	28.0	22.6
California	1.7	20.7	24.1	27.6	25.9	1.2	23.8	20.8	28.1	26.2
Colorado	0.8	16.9	22.3	39.2	20.8	1.0	19.7	17.2	37.6	24.5
Hawai`i	1.1	19.4	29.0	29.0	21.5	0.7	23.5	24.2	30.0	21.7
Idaho	3.1	25.3	31.6	24.4	15.6	2.0	32.8	26.0	27.5	11.8
Kansas	2.5	29.4	17.6	35.3	15.1	1.4	28.1	20.5	28.6	21.4
Montana	1.1	27.9	22.6	31.1	17.3	2.1	25.7	20.4	34.2	17.5
Nebraska	2.6	35.7	20.1	28.6	13.0	1.5	30.3	19.9	33.6	14.8
Nevada	0.0	33.8	32.5	20.8	13.0	2.0	28.3	26.7	28.7	14.3
New Mexico	1.3	19.4	28.4	26.5	24.5	1.2	23.4	26.1	23.2	26.1
North Dakota	2.4	25.4	25.8	34.0	12.4	2.7	30.2	28.4	27.5	11.3
Oklahoma	2.8	29.5	23.0	29.0	15.7	4.4	21.3	21.3	31.3	21.7
Oregon	3.1	28.3	26.8	25.2	16.5	2.0	23.3	22.5	32.8	19.4
South Dakota	3.8	28.2	25.4	32.4	10.3	2.5	31.2	26.3	26.0	14.0
Texas	2.4	26.5	27.7	27.7	15.7	1.6	17.3	21.8	31.5	27.8
Utah	1.2	16.6	27.2	32.0	23.1	0.8	22.7	24.8	33.9	17.8
Washington	0.9	23.4	22.4	30.8	22.4	1.4	20.8	19.9	35.3	22.6
Wyoming	1.4	31.4	28.5	27.8	10.8	3.6	23.5	23.5	30.4	19.0

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-121. Education distribution for current participation and latent demand[1] for hunting by state represented by percentages.

State	Current participation					Latent demand				
	Less than high school diploma	High School diploma or GED	2 year associate degree or trade school	4 year college degree	Advanced degree	Less than high school diploma	High School diploma or GED	2 year associate degree or trade school	4 year college degree	Advanced degree
Alaska	1.1	23.1	34.1	25.3	16.5	3.1	34.4	24.2	24.7	13.7
Arizona	0.0	40.0	26.7	20.0	13.3	2.6	27.6	24.1	22.4	23.3
California	0.0	22.2	22.2	22.2	33.3	0.9	28.6	23.2	25.0	22.3
Colorado	0.0	28.2	25.6	30.8	15.4	1.8	18.7	19.9	39.2	20.5
Hawai`i	0.0	39.1	34.8	21.7	4.3	1.7	28.9	24.8	31.4	13.2
Idaho	3.6	30.9	33.8	21.6	10.1	3.0	28.9	30.8	26.3	10.9
Kansas	3.5	31.6	15.8	33.3	15.8	1.6	20.9	28.7	34.1	14.7
Montana	0.9	32.1	22.8	27.7	16.5	2.7	30.9	21.8	31.3	13.4
Nebraska	1.4	37.0	24.7	27.4	9.6	2.9	32.6	19.8	30.8	14.0
Nevada	0.0	31.6	31.6	26.3	10.5	3.0	33.1	30.7	22.3	10.8
New Mexico	0.0	25.3	32.5	26.5	15.7	1.7	25.6	30.6	18.2	24.0
North Dakota	1.5	27.9	33.1	30.1	7.4	3.8	26.9	27.5	26.9	15.0
Oklahoma	1.3	26.3	30.0	28.8	13.8	5.6	26.5	21.9	30.7	15.3
Oregon	1.9	35.2	27.8	24.1	11.1	4.4	28.9	28.1	27.4	11.1
South Dakota	3.1	30.2	27.1	29.5	10.1	4.2	33.2	22.9	32.2	7.5
Texas	2.6	21.1	23.7	34.2	18.4	2.7	22.7	27.3	30.7	16.7
Utah	1.4	21.9	28.8	26.0	21.9	0.6	19.5	28.9	37.1	13.8
Washington	3.4	27.6	34.5	20.7	13.8	3.5	28.1	28.9	20.2	19.3
Wyoming	2.0	36.9	25.5	22.8	12.8	3.8	28.1	25.9	29.3	12.9

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-122. Education distribution for current participation and latent demand[1] for wildlife viewing by state represented by percentages.

State	Current participation					Latent demand				
	Less than high school diploma	High School diploma or GED	2 year associate degree or trade school	4 year college degree	Advanced degree	Less than high school diploma	High School diploma or GED	2 year associate degree or trade school	4 year college degree	Advanced degree
Alaska	0.8	14.8	24.7	33.7	25.9	2.3	34.7	23.4	26.6	13.1
Arizona	0.7	23.2	19.6	32.6	23.9	1.2	19.0	23.3	30.8	25.7
California	1.4	14.4	15.1	35.3	33.8	1.3	20.1	18.6	31.1	28.9
Colorado	0.4	13.1	21.0	40.1	25.5	1.1	19.3	16.0	34.9	28.6
Hawai`i	0.6	13.4	17.2	39.5	29.3	1.0	21.4	22.7	30.6	24.3
Idaho	3.0	24.3	27.2	31.7	13.9	3.5	30.4	23.6	27.4	14.9
Kansas	1.2	22.7	12.9	33.1	30.1	2.0	26.4	20.8	32.4	18.4
Montana	1.5	22.9	22.6	30.6	22.4	1.8	26.1	19.8	38.9	13.4
Nebraska	0.5	23.5	24.5	33.8	17.6	1.5	32.1	15.4	30.9	20.1
Nevada	1.2	25.9	32.9	22.9	17.1	1.2	25.8	23.4	29.4	20.2
New Mexico	0.6	18.2	23.8	27.2	30.2	1.0	21.3	26.0	25.2	26.5
North Dakota	1.2	18.8	26.5	28.2	25.3	2.8	27.4	26.5	34.6	8.7
Oklahoma	4.4	20.6	26.1	23.9	25.0	3.6	26.2	19.1	32.0	19.1
Oregon	0.9	13.6	27.3	34.5	23.6	1.7	27.2	17.8	33.6	19.8
South Dakota	3.2	26.3	27.6	29.0	13.8	3.7	31.7	21.9	27.5	15.2
Texas	2.1	18.4	20.6	31.2	27.7	0.4	17.8	24.5	31.6	25.7
Utah	0.5	18.5	27.5	35.1	18.5	0.4	21.2	24.2	33.1	21.2
Washington	0.5	17.8	16.2	31.4	34.0	2.6	19.4	18.3	41.8	17.9
Wyoming	1.8	26.8	27.6	25.3	18.5	3.1	25.4	24.2	29.7	17.7

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-123. Household income distribution for current angler participation[1] by state represented by percentages.

State	Current participation								
	Less than $10,000	$10,000-29,999	$30,000-49,999	$50,000-69,999	$70,000-89,999	$90,000-109,999	$110,000-129,999	$130,000-149,999	$150,000 or more
Alaska	3.2	11.9	20.1	21.9	13.2	11.0	7.8	4.6	6.4
Arizona	2.2	11.1	28.9	17.8	15.6	6.7	4.4	2.2	11.1
California	1.8	8.9	14.3	17.9	14.3	16.1	8.9	3.6	14.3
Colorado	2.5	10.8	17.5	25.8	15.8	12.5	7.5	1.7	5.8
Hawai`i	2.4	10.6	16.5	23.5	17.6	8.2	10.6	1.2	9.4
Idaho	1.4	13.3	28.6	22.4	14.3	9.5	3.3	1.4	5.7
Kansas	3.5	14.2	20.4	22.1	15.9	13.3	7.1	1.8	1.8
Montana	4.1	14.4	28.0	23.6	14.8	7.4	3.3	0.7	3.7
Nebraska	1.4	15.3	23.6	23.6	18.1	6.9	4.9	2.1	4.2
Nevada	1.4	7.1	18.6	27.1	20.0	8.6	5.7	1.4	10.0
New Mexico	1.4	13.2	18.1	22.9	18.1	13.9	3.5	1.4	7.6
North Dakota	3.8	16.3	30.4	23.4	15.2	6.0	2.7	0.0	2.2
Oklahoma	3.1	20.4	27.6	21.4	8.7	10.7	3.1	2.6	2.6
Oregon	0.0	9.2	30.8	25.8	13.3	10.8	4.2	1.7	4.2
South Dakota	2.6	13.8	27.2	26.2	14.4	7.2	3.6	0.5	4.6
Texas	2.7	8.1	23.0	17.6	20.3	10.8	8.1	1.4	8.1
Utah	0.6	7.0	27.2	27.8	17.1	7.6	5.1	2.5	5.1
Washington	0.0	10.5	16.8	28.4	15.8	9.5	6.3	3.2	9.5
Wyoming	2.7	13.7	27.1	23.7	14.5	9.9	5.0	1.1	2.3

[1] "Current participation" defined as those who participated in the past 12 months.

Table A-124. Household income distribution for latent angler demand[1] by state represented by percentages.

State	Latent demand								
	Less than $10,000	$10,000-29,999	$30,000-49,999	$50,000-69,999	$70,000-89,999	$90,000-109,999	$110,000-129,999	$130,000-149,999	$150,000 or more
Alaska	8.1	16.6	21.3	17.5	14.7	7.1	4.3	4.3	6.2
Arizona	1.8	14.5	20.8	24.0	15.4	7.7	7.2	1.4	7.2
California	3.6	21.3	23.3	16.5	9.6	9.2	4.0	3.2	9.2
Colorado	0.8	10.4	25.4	23.8	14.2	10.8	5.4	3.1	6.2
Hawai`i	7.4	10.5	26.7	23.3	16.3	5.4	3.9	2.7	3.9
Idaho	6.1	24.8	25.9	18.9	11.7	7.2	1.1	0.8	3.5
Kansas	2.1	22.0	25.7	21.5	12.0	7.9	4.7	1.0	3.1
Montana	7.1	25.3	26.7	23.6	8.5	3.4	2.0	0.6	2.8
Nebraska	5.2	17.4	22.6	25.2	14.8	6.5	5.2	0.9	2.2
Nevada	3.9	14.8	24.3	18.7	18.3	9.2	4.6	2.5	3.9
New Mexico	7.4	17.0	23.0	17.0	14.5	7.9	4.7	1.9	6.6
North Dakota	3.9	21.1	30.4	24.5	10.3	3.9	2.5	1.5	2.0
Oklahoma	7.7	15.9	28.0	17.9	13.4	9.3	3.7	1.6	2.4
Oregon	3.9	20.7	22.4	21.1	16.8	8.2	3.4	1.3	2.2
South Dakota	4.4	24.4	34.0	16.4	9.2	5.2	1.2	0.0	5.2
Texas	2.6	13.5	21.0	21.0	17.9	10.5	3.9	2.2	7.4
Utah	4.1	20.5	29.7	16.0	13.2	5.9	2.3	3.2	5.0
Washington	3.0	14.6	21.6	23.6	10.1	11.1	6.5	2.5	7.0
Wyoming	3.7	21.2	30.4	17.2	15.0	6.1	3.4	1.5	1.5

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-125. Household income distribution for current hunter participation[1] by state represented by percentages.

State	Current participation								
	Less than $10,000	$10,000-29,999	$30,000-49,999	$50,000-69,999	$70,000-89,999	$90,000-109,999	$110,000-129,999	$130,000-149,999	$150,000 or more
Alaska	1.2	9.3	20.9	20.9	18.6	12.8	7.0	2.3	7.0
Arizona	0.0	7.1	14.3	28.6	21.4	7.1	7.1	0.0	14.3
California	0.0	0.0	16.7	16.7	16.7	16.7	16.7	0.0	16.7
Colorado	0.0	5.9	26.5	17.6	29.4	5.9	8.8	2.9	2.9
Hawai`i	0.0	9.5	23.8	33.3	14.3	14.3	0.0	0.0	4.8
Idaho	1.6	12.7	30.2	25.4	15.1	8.7	2.4	1.6	2.4
Kansas	3.9	9.8	19.6	21.6	25.5	7.8	5.9	2.0	3.9
Montana	3.3	12.2	29.1	23.5	17.4	6.1	3.8	0.0	4.7
Nebraska	1.5	13.4	16.4	29.9	20.9	9.0	3.0	3.0	3.0
Nevada	5.6	5.6	16.7	33.3	5.6	11.1	5.6	0.0	16.7
New Mexico	3.9	11.7	22.1	18.2	15.6	10.4	10.4	0.0	7.8
North Dakota	1.6	14.8	24.6	26.2	19.7	5.7	3.3	2.5	1.6
Oklahoma	2.8	13.9	29.2	23.6	11.1	8.3	6.9	2.8	1.4
Oregon	0.0	6.3	27.1	29.2	14.6	14.6	4.2	0.0	4.2
South Dakota	1.7	11.0	26.3	30.5	18.6	3.4	3.4	0.8	4.2
Texas	2.9	2.9	17.1	20.0	22.9	11.4	8.6	0.0	14.3
Utah	0.0	10.6	22.7	21.2	21.2	7.6	7.6	1.5	7.6
Washington	0.0	11.1	14.8	37.0	18.5	7.4	3.7	3.7	3.7
Wyoming	1.4	10.6	26.8	25.4	15.5	10.6	3.5	2.1	4.2

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-126. Household income distribution for latent hunter demand[1] by state represented by percentages.

State	Latent demand								
	Less than $10,000	$10,000-29,999	$30,000-49,999	$50,000-69,999	$70,000-89,999	$90,000-109,999	$110,000-129,999	$130,000-149,999	$150,000 or more
Alaska	8.3	17.0	19.4	19.9	14.1	6.8	7.3	2.4	4.9
Arizona	2.8	16.8	21.5	20.6	15.9	10.3	7.5	0.0	4.7
California	2.7	25.2	18.9	16.2	16.2	9.9	2.7	2.7	5.4
Colorado	0.7	7.6	27.1	25.7	14.6	11.8	5.6	2.8	4.2
Hawai`i	6.1	14.9	18.4	21.9	19.3	6.1	4.4	3.5	5.3
Idaho	4.0	23.8	29.0	17.7	11.7	8.5	1.2	0.4	3.6
Kansas	0.8	22.0	25.2	26.0	10.6	8.9	4.9	1.6	0.0
Montana	8.8	27.6	27.2	23.0	7.9	2.1	1.3	0.8	1.3
Nebraska	2.6	15.7	27.5	22.9	14.4	5.9	7.8	0.0	3.3
Nevada	7.0	7.6	26.8	21.7	13.4	8.9	7.0	3.2	4.5
New Mexico	6.0	18.6	17.2	20.0	15.3	8.8	3.3	1.9	8.8
North Dakota	5.6	21.1	27.5	20.4	15.5	6.3	0.7	0.7	2.1
Oklahoma	5.3	16.9	25.9	20.6	15.9	8.5	3.7	2.1	1.1
Oregon	1.6	21.8	33.9	22.6	10.5	4.8	1.6	0.8	2.4
South Dakota	3.3	19.1	35.0	16.9	10.9	7.7	1.1	1.1	4.9
Texas	3.5	12.1	26.2	21.3	18.4	9.2	3.5	0.7	5.0
Utah	2.6	17.1	28.9	24.3	11.8	7.2	2.6	2.6	2.6
Washington	2.9	12.6	29.1	16.5	12.6	16.5	2.9	1.9	4.9
Wyoming	2.5	19.2	30.0	20.4	14.6	5.8	3.8	2.1	1.7

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-127. Household income distribution for current wildlife viewer participation[1] by state represented by percentages.

State	Current participation								
	Less than $10,000	$10,000-29,999	$30,000-49,999	$50,000-69,999	$70,000-89,999	$90,000-109,999	$110,000-129,999	$130,000-149,999	$150,000 or more
Alaska	1.8	11.1	23.0	20.4	13.7	8.4	8.0	6.2	7.5
Arizona	3.1	13.2	18.6	24.0	14.0	7.8	7.0	3.1	9.3
California	0.0	18.8	19.5	15.8	9.8	8.3	5.3	3.8	18.8
Colorado	1.2	8.0	26.9	26.9	15.3	11.2	4.4	1.6	4.4
Hawai`i	8.1	6.8	22.3	19.6	17.6	7.4	5.4	2.0	10.8
Idaho	4.2	19.9	27.2	21.8	10.9	6.7	3.2	0.6	5.4
Kansas	3.9	16.3	21.6	19.0	17.6	10.5	5.2	3.3	2.6
Montana	4.5	18.9	28.1	25.5	11.5	5.5	1.8	1.0	3.1
Nebraska	2.8	15.5	20.4	21.0	22.7	7.7	4.4	2.2	3.3
Nevada	6.4	11.5	19.9	16.7	20.5	10.9	5.1	3.2	5.8
New Mexico	3.3	17.7	21.3	23.0	12.3	11.3	3.3	2.7	5.0
North Dakota	3.8	12.1	26.8	25.5	17.8	5.1	1.9	2.5	4.5
Oklahoma	2.5	23.9	24.5	20.9	11.7	5.5	4.9	1.8	4.3
Oregon	6.6	15.2	21.2	21.7	11.1	10.6	8.6	0.5	4.5
South Dakota	4.3	18.7	26.7	26.2	10.7	7.0	2.7	1.1	2.7
Texas	0.0	13.1	24.6	23.8	13.1	9.2	6.9	0.0	9.2
Utah	4.3	13.5	27.4	22.1	13.9	8.2	1.4	3.4	5.8
Washington	2.4	11.4	13.8	19.2	16.2	13.2	9.6	3.6	10.8
Wyoming	3.6	15.3	24.2	23.6	17.2	8.9	3.1	0.6	3.6

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-128. Household income distribution for latent wildlife viewer demand[1] by state represented by percentages.

State	Latent demand								
	Less than $10,000	$10,000-29,999	$30,000-49,999	$50,000-69,999	$70,000-89,999	$90,000-109,999	$110,000-129,999	$130,000-149,999	$150,000 or more
Alaska	9.4	14.4	19.8	19.3	16.3	11.4	3.5	2.0	4.0
Arizona	1.3	11.1	23.9	19.5	19.0	9.7	6.6	1.3	7.5
California	2.7	19.1	24.7	15.1	11.0	10.4	4.0	5.7	7.4
Colorado	1.2	11.8	20.8	20.8	16.7	10.2	4.5	3.7	10.2
Hawai`i	2.8	10.6	20.8	22.6	17.3	12.4	6.0	3.5	3.9
Idaho	5.1	21.7	23.6	18.5	15.7	9.4	1.1	0.9	4.0
Kansas	1.8	22.9	26.0	24.7	9.3	7.0	4.8	0.4	3.1
Montana	7.5	22.0	33.1	18.7	9.8	3.9	2.0	0.7	2.3
Nebraska	4.1	19.0	21.0	26.6	11.4	7.6	5.9	1.0	3.4
Nevada	3.0	10.9	23.2	23.8	18.2	7.9	6.3	1.3	5.3
New Mexico	6.8	17.5	23.8	13.2	14.5	9.9	5.8	0.5	7.9
North Dakota	4.5	20.1	33.7	20.5	11.5	4.9	2.1	1.0	1.7
Oklahoma	5.8	18.6	28.0	18.0	11.3	11.6	2.4	2.1	2.1
Oregon	2.5	17.2	29.0	19.4	17.2	8.6	2.9	1.1	2.2
South Dakota	2.5	23.4	27.2	18.8	15.9	5.9	1.6	0.0	4.7
Texas	2.9	11.7	23.4	19.7	19.7	10.0	4.2	2.1	6.3
Utah	0.4	17.0	27.5	20.6	15.4	6.9	5.3	2.0	4.9
Washington	3.2	12.0	23.6	24.0	13.6	8.8	6.0	4.0	4.8
Wyoming	3.1	20.8	31.1	19.1	10.2	7.2	4.4	2.0	2.0

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-129. Respondent average length of residency in years for current participation and latent angler demand[1] groups by state.

State	Current participation		Latent demand	
	Mean	Std. deviation	Mean	Std. deviation
Alaska	20.36	14.46	25.22	16.56
Arizona	21.92	16.14	19.60	14.73
California	33.31	18.32	24.87	20.05
Colorado	26.26	17.56	24.67	19.56
Hawai`i	29.12	18.52	29.02	21.46
Idaho	28.36	18.19	28.56	19.61
Kansas	33.10	17.12	33.01	19.69
Montana	29.04	18.50	29.98	19.79
Nebraska	33.70	17.24	35.49	20.72
Nevada	18.41	15.27	14.58	13.92
New Mexico	26.51	16.71	25.27	17.64
North Dakota	31.42	20.01	33.17	21.54
Oklahoma	31.80	16.75	30.55	20.61
Oregon	30.82	19.44	28.22	20.93
South Dakota	30.27	18.49	33.79	20.71
Texas	32.31	16.94	27.99	19.08
Utah	29.93	16.74	27.78	16.88
Washington	29.41	20.27	26.42	18.41
Wyoming	27.25	16.93	26.81	18.55

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-130. Respondent average length of residency in years for current participation and latent hunter demand[1] groups by state.

State	Current participation		Latent demand	
	Mean	Std. deviation	Mean	Std. deviation
Alaska	23.59	16.03	24.51	15.36
Arizona	27.59	15.94	21.76	16.99
California	37.40	21.21	29.31	22.13
Colorado	28.00	17.99	25.31	20.32
Hawai`i	29.94	20.61	32.40	18.60
Idaho	28.53	17.63	27.63	19.50
Kansas	35.26	16.05	35.30	18.60
Montana	29.61	17.29	30.22	21.06
Nebraska	35.50	15.38	35.17	18.92
Nevada	22.80	17.80	15.11	13.72
New Mexico	28.39	16.95	27.03	18.11
North Dakota	33.82	17.44	31.99	21.78
Oklahoma	31.81	17.26	32.03	19.06
Oregon	34.99	17.92	31.31	21.23
South Dakota	34.02	17.63	35.89	21.06
Texas	36.93	17.77	30.87	18.73
Utah	32.31	15.13	30.39	17.11
Washington	31.04	20.70	27.48	19.54
Wyoming	28.01	16.80	28.55	17.85

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-131. Respondent average length of residency in years for current participation and latent wildlife viewer demand[1] groups by state.

State	Current participation		Latent demand	
	Mean	Std. deviation	Mean	Std. deviation
Alaska	19.31	14.38	25.70	16.03
Arizona	21.85	16.57	17.79	15.06
California	27.35	18.37	27.20	20.27
Colorado	22.08	17.38	27.40	20.35
Hawai`i	21.29	16.64	32.65	20.61
Idaho	26.05	18.93	28.48	19.10
Kansas	30.04	18.01	33.83	19.07
Montana	28.15	18.50	32.61	20.90
Nebraska	32.34	18.95	33.83	19.59
Nevada	15.70	14.55	14.43	13.92
New Mexico	23.07	16.27	24.11	17.84
North Dakota	30.06	20.14	33.61	20.47
Oklahoma	29.56	18.99	30.81	19.67
Oregon	26.52	19.94	28.79	21.06
South Dakota	29.97	18.39	33.07	20.78
Texas	27.77	16.82	29.80	19.11
Utah	27.35	16.58	29.58	18.42
Washington	25.40	19.72	28.37	18.49
Wyoming	26.33	17.92	27.93	19.01

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-132. Size of community of current residence for current angler participation[1] group by state represented by percentages.

State	Current participation							
	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Alaska	23.3	7.0	7.9	13.2	10.6	10.6	22.5	4.8
Arizona	67.3	4.1	12.2	4.1	2.0	2.0	4.1	4.1
California	26.8	12.5	19.6	14.3	16.1	7.1	0.0	3.6
Colorado	38.1	16.7	13.5	4.8	7.9	7.1	5.6	6.3
Hawai`i	29.5	4.5	10.2	9.1	19.3	10.2	12.5	4.5
Idaho	6.9	15.6	22.0	18.3	10.1	6.4	9.2	11.5
Kansas	17.1	16.2	9.4	10.3	11.1	9.4	10.3	16.2
Montana	1.1	8.2	30.5	20.1	5.0	10.8	15.1	9.3
Nebraska	36.7	5.4	2.7	10.2	9.5	9.5	16.3	9.5
Nevada	59.5	6.8	5.4	4.1	13.5	2.7	4.1	4.1
New Mexico	26.7	8.0	19.3	14.0	10.7	6.7	4.7	10.0
North Dakota	1.6	13.5	25.5	14.6	13.5	4.7	14.6	12.0
Oklahoma	21.7	7.4	8.9	15.3	15.8	6.4	10.8	13.8
Oregon	16.9	14.5	12.1	10.5	14.5	9.7	8.1	13.7
South Dakota	1.0	15.4	10.4	6.0	20.9	5.0	24.9	16.4
Texas	32.5	10.4	11.7	11.7	9.1	7.8	7.8	9.1
Utah	25.8	11.9	17.0	13.8	14.5	10.1	3.8	3.1
Washington	17.2	17.2	14.1	11.1	11.1	10.1	2.0	17.2
Wyoming	0.7	0.4	20.8	19.3	25.3	17.8	8.6	7.1

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-133. Size of community of current residence for latent angler demand[1] group by state represented by percentages.

State	Latent demand							
	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Alaska	25.5	1.4	12.5	19.9	4.6	10.6	19.0	6.5
Arizona	62.9	14.2	5.6	6.9	6.5	0.9	2.6	0.4
California	42.9	19.7	12.4	10.4	6.6	4.6	1.9	1.5
Colorado	41.9	15.5	13.4	5.4	6.5	4.7	3.2	9.4
Hawai`i	31.9	7.0	11.5	15.6	13.7	14.4	3.0	3.0
Idaho	11.4	18.0	20.6	12.2	8.6	9.6	6.9	12.7
Kansas	26.1	13.0	11.6	6.8	11.6	5.8	12.1	13.0
Montana	1.1	10.1	27.1	15.9	8.8	10.4	12.3	14.2
Nebraska	36.2	11.0	3.5	9.4	7.1	7.5	12.6	12.6
Nevada	63.0	6.9	6.6	6.3	6.3	4.6	3.3	3.0
New Mexico	38.7	5.8	18.9	10.8	13.2	4.7	3.4	4.5
North Dakota	3.3	15.2	26.7	11.4	8.6	3.8	17.6	13.3
Oklahoma	27.6	10.2	13.0	15.0	12.2	7.1	10.2	4.7
Oregon	27.2	16.6	14.0	14.5	9.8	6.4	3.4	8.1
South Dakota	2.7	19.7	16.3	6.1	16.3	6.4	17.8	14.8
Texas	41.2	11.8	15.9	13.5	6.9	2.9	4.5	3.3
Utah	21.1	18.4	18.8	11.2	15.2	8.5	5.4	1.3
Washington	31.2	14.0	17.7	13.0	7.0	7.4	3.7	6.0
Wyoming	0.3	0.9	36.7	16.3	16.6	14.9	6.7	7.6

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-134. Size of community of current residence for current hunter participation[1] group by state represented by percentages.

State	Current participation							
	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Alaska	10.3	8.0	8.0	14.9	5.7	11.5	31.0	10.3
Arizona	53.8	7.7	15.4	0.0	0.0	0.0	15.4	7.7
California	28.6	14.3	14.3	14.3	14.3	0.0	0.0	14.3
Colorado	23.7	7.9	13.2	13.2	7.9	10.5	7.9	15.8
Hawai`i	14.3	0.0	9.5	19.0	9.5	23.8	19.0	4.8
Idaho	7.4	9.6	17.6	15.4	10.3	10.3	10.3	19.1
Kansas	7.3	9.1	5.5	7.3	16.4	14.5	14.5	25.5
Montana	0.5	11.8	19.5	18.2	5.9	10.5	19.5	14.1
Nebraska	21.4	2.9	4.3	15.7	11.4	10.0	17.1	17.1
Nevada	52.6	0.0	0.0	10.5	21.1	5.3	5.3	5.3
New Mexico	18.8	7.5	17.5	18.8	18.8	8.8	3.8	6.3
North Dakota	2.4	12.6	22.0	11.8	7.9	5.5	15.0	22.8
Oklahoma	22.4	9.2	5.3	14.5	10.5	7.9	14.5	15.8
Oregon	5.8	5.8	11.5	11.5	19.2	11.5	13.5	21.2
South Dakota	2.4	10.4	9.6	7.2	25.6	4.0	16.0	24.8
Texas	25.0	8.3	13.9	13.9	8.3	8.3	11.1	11.1
Utah	22.1	4.4	14.7	16.2	19.1	8.8	11.8	2.9
Washington	11.5	11.5	19.2	19.2	11.5	3.8	3.8	19.2
Wyoming	1.4	0.0	18.3	16.2	26.1	15.5	12.0	10.6

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-135. Size of community of current residence for latent hunter demand[1] group by state represented by percentages.

State	Latent demand							
	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Alaska	25.6	2.7	11.9	14.2	8.2	8.2	22.4	6.8
Arizona	63.8	11.2	6.0	6.0	7.8	0.0	4.3	0.9
California	41.3	16.5	10.1	10.1	11.9	6.4	1.8	1.8
Colorado	36.7	19.6	13.3	4.4	5.1	5.7	4.4	10.8
Hawai`i	26.7	4.2	9.2	15.8	20.0	15.0	5.8	3.3
Idaho	9.9	17.2	21.4	13.7	9.2	9.9	7.3	11.5
Kansas	26.0	13.4	11.0	9.4	11.8	6.3	11.8	10.2
Montana	1.6	9.2	27.1	15.1	8.8	11.2	12.0	15.1
Nebraska	29.6	8.8	3.1	9.4	8.8	8.8	18.2	13.2
Nevada	56.0	6.6	7.2	7.8	9.0	4.8	1.8	6.6
New Mexico	34.4	9.4	19.2	14.3	5.8	4.5	4.0	8.5
North Dakota	0.7	18.9	24.5	8.4	14.7	4.9	16.8	11.2
Oklahoma	21.9	6.1	10.7	16.3	18.9	6.6	11.7	7.7
Oregon	22.0	16.5	15.7	9.4	10.2	10.2	5.5	10.2
South Dakota	2.0	21.1	15.1	5.5	13.1	6.5	21.6	15.1
Texas	30.4	12.8	20.3	10.1	8.8	4.7	6.8	6.1
Utah	19.5	16.2	18.2	8.4	16.9	11.7	4.5	4.5
Washington	19.8	13.5	17.1	14.4	8.1	9.9	5.4	11.7
Wyoming	0.4	1.6	26.9	18.2	22.5	15.8	4.3	10.3

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-136. Size of community of current residence for current wildlife viewer participation[1] group by state represented by percentages.

State	Current participation							
	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Alaska	21.8	5.1	9.0	17.9	7.7	10.3	21.4	6.8
Arizona	65.7	9.7	6.0	6.0	5.2	2.2	2.2	3.0
California	42.6	12.5	12.5	10.3	8.8	8.1	2.9	2.2
Colorado	41.3	20.1	15.1	3.1	6.2	4.2	3.5	6.6
Hawai`i	32.5	7.8	7.1	11.7	10.4	14.9	11.0	4.5
Idaho	9.9	11.7	22.2	15.3	8.1	10.5	8.7	13.8
Kansas	18.6	16.0	18.6	9.6	10.3	6.4	10.3	10.3
Montana	2.0	7.6	25.4	21.6	7.4	9.4	14.0	12.7
Nebraska	39.2	11.9	3.6	9.8	9.8	5.2	13.4	7.2
Nevada	57.2	10.2	4.8	7.8	7.2	6.0	4.2	2.4
New Mexico	36.7	6.8	19.8	8.8	11.4	6.5	3.9	6.2
North Dakota	0.6	16.5	25.9	10.8	11.4	6.3	16.5	12.0
Oklahoma	24.6	8.2	11.1	14.0	13.5	9.4	9.4	9.9
Oregon	28.4	13.2	12.3	13.2	11.8	8.8	3.9	8.3
South Dakota	1.0	15.7	21.2	8.6	16.7	7.1	20.2	9.6
Texas	45.7	15.0	7.1	12.9	2.1	5.0	6.4	5.7
Utah	23.1	17.5	21.2	9.9	14.2	9.0	3.8	1.4
Washington	31.1	16.4	15.8	11.9	6.8	7.9	1.7	8.5
Wyoming	0.3	0.3	23.7	17.0	23.4	20.2	8.0	7.2

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-137. Size of community of current residence for latent wildlife viewer demand[1] group by state represented by percentages.

State	Latent demand							
	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Alaska	30.6	2.9	10.0	13.4	7.7	9.1	20.6	5.7
Arizona	56.4	14.1	8.3	9.5	5.8	2.9	2.5	0.4
California	40.6	17.1	15.6	11.4	6.3	5.4	1.0	2.5
Colorado	42.6	15.2	12.1	5.9	7.4	6.3	3.1	7.4
Hawai`i	28.1	4.7	12.5	17.6	21.0	9.5	3.1	3.4
Idaho	9.9	25.6	21.1	16.3	6.8	6.2	5.4	8.7
Kansas	31.1	13.4	11.3	5.9	10.1	6.3	8.8	13.0
Montana	0.3	11.4	30.9	14.5	6.8	11.1	13.3	11.7
Nebraska	38.6	11.8	1.0	11.1	6.5	8.5	11.8	10.8
Nevada	66.1	8.0	7.0	4.6	5.5	3.4	2.4	3.1
New Mexico	39.5	4.7	19.7	12.2	11.7	4.9	3.6	3.6
North Dakota	2.7	16.3	27.8	12.9	10.5	4.1	16.3	9.5
Oklahoma	25.4	9.0	12.9	12.0	13.2	6.3	9.9	11.4
Oregon	30.3	16.5	14.1	9.5	11.3	6.3	3.5	8.5
South Dakota	2.4	20.6	12.8	5.1	15.8	6.0	19.7	17.6
Texas	38.8	12.5	16.9	11.4	9.4	1.6	5.1	4.3
Utah	23.1	19.2	16.9	12.2	12.5	7.8	6.3	2.0
Washington	28.4	17.4	20.5	10.2	8.3	4.5	3.8	6.8
Wyoming	0.6	1.0	35.8	18.1	17.4	14.8	4.8	7.4

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-138. Perceived suburban residence of current community of current participation and latent demand[1] for participation in wildlife-related recreation by state represented by percentages.

State	Fishing		Hunting		Wildlife viewing	
	Current participation	Latent demand	Current participation	Latent demand	Current participation	Latent demand
Alaska	21.1	24.7	23.9	25.7	20.6	23.1
Arizona	51.1	56.7	46.7	53.4	55.9	57.4
California	44.6	53.8	50.0	55.0	47.8	54.2
Colorado	48.8	48.0	40.5	47.7	50.0	45.1
Hawai`i	43.0	53.8	42.9	61.2	45.9	55.3
Idaho	29.2	25.0	27.1	26.4	24.6	32.2
Kansas	37.6	33.0	29.1	40.6	35.6	37.7
Montana	15.4	17.5	14.7	19.5	13.9	15.7
Nebraska	26.5	23.5	18.8	24.1	26.4	22.0
Nevada	50.0	51.3	38.9	43.5	48.5	54.1
New Mexico	31.3	19.2	25.9	19.9	23.8	23.5
North Dakota	6.8	9.0	10.2	8.2	11.3	6.1
Oklahoma	37.9	39.6	35.5	40.8	37.0	39.6
Oregon	29.8	31.5	22.0	30.7	31.4	35.7
South Dakota	12.6	16.2	6.6	18.8	17.9	12.3
Texas	42.9	49.2	41.7	43.8	50.0	47.6
Utah	61.7	52.5	47.1	52.7	55.6	55.4
Washington	45.5	37.7	38.5	41.3	40.1	42.4
Wyoming	6.7	7.4	9.7	8.0	7.8	7.2

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-139. Size of community of childhood residence for current angler participation[1] group by state represented by percentages.

State	Current participation							
	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Alaska	20.7	7.5	8.8	9.3	11.0	11.5	18.9	12.3
Arizona	33.3	8.3	10.4	6.3	6.3	12.5	14.6	8.3
California	25.9	10.3	15.5	13.8	17.2	5.2	6.9	5.2
Colorado	27.6	7.3	11.4	12.2	9.8	8.9	9.8	13.0
Hawai`i	22.4	7.1	8.2	5.9	17.6	14.1	12.9	11.8
Idaho	11.1	8.3	9.7	13.8	10.1	9.7	16.6	20.7
Kansas	13.0	14.8	7.8	6.1	10.4	8.7	14.8	24.3
Montana	9.8	5.8	16.7	14.9	7.6	8.7	20.3	16.3
Nebraska	22.4	6.8	4.8	8.2	10.9	9.5	17.7	19.7
Nevada	32.4	10.8	6.8	8.1	9.5	10.8	8.1	13.5
New Mexico	23.3	8.7	8.0	11.3	14.0	4.0	14.7	16.0
North Dakota	5.2	6.8	11.0	11.0	9.9	5.8	23.0	27.2
Oklahoma	15.1	7.3	7.8	9.3	17.1	9.3	16.6	17.6
Oregon	19.2	8.0	12.8	11.2	12.8	9.6	12.0	14.4
South Dakota	9.1	10.1	6.1	5.1	15.2	9.1	25.8	19.7
Texas	32.9	7.9	10.5	10.5	9.2	6.6	13.2	9.2
Utah	17.4	8.7	11.2	14.9	13.0	13.0	11.2	10.6
Washington	17.0	14.0	10.0	16.0	10.0	12.0	6.0	15.0
Wyoming	8.2	3.0	10.5	12.7	17.6	10.9	20.6	16.5

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-140. Size of community of childhood residence for latent angler demand[1] group by state represented by percentages.

State	Latent demand							
	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Alaska	16.4	8.2	12.8	10.0	12.8	10.0	12.8	16.9
Arizona	34.8	12.3	8.4	6.2	14.5	6.2	10.6	7.0
California	24.9	16.1	18.0	10.0	13.8	6.1	4.6	6.5
Colorado	26.8	11.4	12.5	11.4	9.2	6.3	6.6	15.8
Hawai`i	25.8	16.6	9.2	9.6	16.6	8.5	7.0	6.6
Idaho	12.7	9.1	10.4	8.9	10.4	8.1	16.0	24.4
Kansas	16.4	10.0	7.0	9.5	6.0	9.5	16.9	24.9
Montana	9.5	7.3	11.5	15.4	7.5	8.9	20.4	19.6
Nebraska	19.0	8.5	3.2	10.9	10.9	11.7	12.6	23.1
Nevada	30.1	12.0	6.4	13.4	8.7	8.4	13.7	7.4
New Mexico	26.5	7.1	8.9	10.5	15.5	8.9	11.3	11.3
North Dakota	4.3	8.1	11.5	7.7	9.1	4.8	29.2	25.4
Oklahoma	19.8	8.5	6.6	13.2	10.1	9.7	14.3	17.8
Oregon	20.7	9.5	8.6	14.2	14.2	7.3	10.3	15.1
South Dakota	7.4	8.1	7.8	3.5	7.4	8.5	24.4	32.9
Texas	32.5	9.5	9.9	14.8	7.8	5.8	11.5	8.2
Utah	15.6	17.0	12.5	11.6	8.0	11.6	10.3	13.4
Washington	24.9	13.6	15.0	10.3	11.3	7.0	8.0	9.9
Wyoming	7.5	3.0	15.4	14.8	11.1	16.9	12.7	18.7

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-141. Size of community of childhood residence for current hunter participation[1] group by state represented by percentages.

State	Current participation							
	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Alaska	11.4	8.0	4.5	9.1	10.2	9.1	29.5	18.2
Arizona	40.0	6.7	6.7	6.7	6.7	6.7	20.0	6.7
California	22.2	11.1	11.1	11.1	11.1	11.1	11.1	11.1
Colorado	16.2	5.4	13.5	10.8	8.1	13.5	13.5	18.9
Hawai`i	14.3	4.8	4.8	0.0	19.0	9.5	23.8	23.8
Idaho	10.9	4.3	7.2	11.6	10.1	9.4	21.0	25.4
Kansas	10.7	3.6	5.4	8.9	12.5	10.7	19.6	28.6
Montana	4.1	4.6	12.0	15.2	9.7	9.2	24.9	20.3
Nebraska	10.0	2.9	4.3	11.4	10.0	12.9	22.9	25.7
Nevada	20.0	5.0	5.0	10.0	15.0	15.0	20.0	10.0
New Mexico	9.6	7.2	8.4	16.9	21.7	8.4	16.9	10.8
North Dakota	4.0	3.2	10.4	9.6	6.4	5.6	24.8	36.0
Oklahoma	13.3	6.7	5.3	6.7	16.0	10.7	21.3	20.0
Oregon	7.7	3.8	9.6	5.8	19.2	11.5	17.3	25.0
South Dakota	1.6	8.2	5.7	7.4	18.0	5.7	24.6	28.7
Texas	16.7	5.6	13.9	11.1	11.1	11.1	11.1	19.4
Utah	17.4	4.3	8.7	8.7	15.9	11.6	18.8	14.5
Washington	11.5	3.8	3.8	26.9	15.4	11.5	11.5	15.4
Wyoming	3.5	2.1	8.5	14.2	17.7	14.2	19.9	19.9

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-142. Size of community of childhood residence for latent hunter demand[1] group by state represented by percentages.

State	Latent demand							
	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Alaska	18.3	6.8	10.0	8.2	13.7	11.0	17.4	14.6
Arizona	29.5	10.7	8.9	7.1	10.7	9.8	16.1	7.1
California	30.1	4.4	11.5	10.6	13.3	8.0	9.7	12.4
Colorado	27.7	6.5	9.0	11.0	8.4	7.1	9.0	21.3
Hawai`i	23.9	10.3	12.0	9.4	16.2	12.0	12.8	3.4
Idaho	8.3	9.8	11.3	9.8	9.4	8.7	18.5	24.2
Kansas	16.1	11.3	7.3	7.3	7.3	6.5	21.0	23.4
Montana	10.6	6.5	13.8	13.8	7.3	9.3	19.5	19.1
Nebraska	24.7	5.7	1.3	9.5	9.5	8.2	16.5	24.7
Nevada	25.8	8.0	5.5	11.7	10.4	12.3	18.4	8.0
New Mexico	26.7	5.4	11.3	6.8	10.9	9.5	15.4	14.0
North Dakota	3.5	8.5	13.5	7.1	7.8	5.7	31.2	22.7
Oklahoma	15.0	5.5	8.0	12.5	14.0	10.5	15.5	19.0
Oregon	20.5	9.4	9.4	11.8	10.2	6.3	11.8	20.5
South Dakota	5.7	6.7	8.2	2.6	10.3	7.7	27.3	31.4
Texas	29.9	7.6	13.9	11.8	8.3	6.9	13.9	7.6
Utah	13.6	13.0	11.7	12.3	11.0	14.3	10.4	13.6
Washington	25.2	4.5	13.5	17.1	9.0	9.0	6.3	15.3
Wyoming	6.9	2.8	8.5	13.4	17.0	12.1	17.0	22.3

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-143. Size of community of childhood residence for current wildlife viewer participation[1] group by state represented by percentages.

State	Current participation							
	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Alaska	19.6	7.2	11.5	11.9	14.5	11.5	14.0	9.8
Arizona	34.6	14.3	6.0	6.8	12.0	6.8	12.8	6.8
California	21.7	11.6	18.8	17.4	13.8	6.5	4.3	5.8
Colorado	33.6	9.3	12.4	9.3	8.9	7.3	7.7	11.6
Hawai`i	24.8	13.7	8.5	9.2	13.1	9.2	13.1	8.5
Idaho	15.5	9.2	8.0	10.7	8.9	6.5	19.0	22.0
Kansas	19.9	13.5	10.3	7.7	9.0	6.4	15.4	17.9
Montana	11.9	8.3	13.2	14.8	9.1	7.0	19.2	16.4
Nebraska	23.5	10.2	4.8	8.6	10.2	8.0	13.4	21.4
Nevada	32.5	13.8	5.6	13.8	5.0	8.1	10.6	10.6
New Mexico	26.1	11.6	8.9	9.9	15.8	7.6	9.9	10.2
North Dakota	10.1	6.9	10.7	8.8	11.9	8.2	18.9	24.5
Oklahoma	20.0	7.1	9.4	6.5	15.3	12.4	13.5	15.9
Oregon	22.0	8.3	7.8	12.2	13.2	10.2	14.1	12.2
South Dakota	12.8	8.2	7.1	4.1	11.2	6.6	24.0	26.0
Texas	40.7	11.4	6.4	10.7	6.4	7.1	12.1	5.0
Utah	17.3	12.6	11.7	13.1	9.8	15.4	10.3	9.8
Washington	24.4	13.1	11.9	15.3	9.1	5.7	8.5	11.9
Wyoming	7.6	4.9	10.4	12.5	16.6	13.9	18.3	15.8

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-144. Size of community of childhood residence for latent wildlife viewer demand[1] group by state represented by percentages.

State	Latent demand							
	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Alaska	19.9	7.6	8.5	10.9	10.0	9.0	17.1	17.1
Arizona	38.1	12.3	11.0	5.9	10.2	5.5	8.5	8.5
California	28.9	13.8	16.7	10.7	13.2	6.3	4.1	6.3
Colorado	26.1	11.1	12.3	14.6	11.5	6.3	5.5	12.6
Hawai`i	29.3	11.8	10.8	9.1	16.8	7.4	9.4	5.4
Idaho	12.8	9.2	12.0	10.6	10.9	10.0	14.2	20.3
Kansas	17.8	10.2	5.9	10.6	5.9	9.3	16.9	23.3
Montana	6.6	5.4	15.5	14.2	7.9	11.4	19.6	19.6
Nebraska	19.7	8.9	3.9	9.5	10.8	10.8	17.0	19.3
Nevada	29.9	11.1	9.6	13.9	12.3	6.8	11.1	5.2
New Mexico	30.6	8.2	7.2	9.3	15.2	7.7	12.1	9.8
North Dakota	3.4	8.2	12.0	8.6	8.6	5.8	25.8	27.5
Oklahoma	18.5	8.2	6.2	12.4	11.8	7.9	15.6	19.4
Oregon	21.2	8.3	7.6	15.8	11.5	9.7	11.5	14.4
South Dakota	6.1	10.1	9.8	2.8	9.2	9.5	23.6	28.8
Texas	32.5	11.1	10.3	13.1	8.3	4.4	9.9	10.3
Utah	17.3	18.9	12.6	11.0	11.0	7.1	11.0	11.0
Washington	25.0	11.5	14.6	10.0	10.4	9.6	5.8	13.1
Wyoming	10.1	2.6	15.6	13.6	13.3	13.6	12.7	18.5

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-145. Perceived suburban residence of childhood of current participation and latent demand[1] for participation in wildlife-related recreation by state represented by percentages.

State	Fishing		Hunting		Wildlife viewing	
	Current participation	Latent demand	Current participation	Latent demand	Current participation	Latent demand
Alaska	26.5	29.5	18.0	29.1	30.1	27.8
Arizona	37.5	43.0	26.7	38.6	42.3	42.7
California	47.4	43.5	37.5	31.8	50.4	41.7
Colorado	37.8	36.1	18.9	36.3	41.2	34.8
Hawai`i	40.9	52.1	33.3	55.5	49.3	51.9
Idaho	22.0	22.8	17.2	21.8	24.8	23.1
Kansas	27.4	17.8	20.0	27.6	20.0	24.5
Montana	16.9	19.5	13.1	19.9	19.1	16.9
Nebraska	19.5	18.9	14.5	20.2	23.2	17.5
Nevada	44.0	32.6	15.8	28.3	38.2	39.3
New Mexico	26.5	22.5	17.3	20.2	25.5	23.7
North Dakota	12.4	10.4	7.8	7.5	12.4	10.8
Oklahoma	26.7	30.5	20.8	26.9	30.3	29.5
Oregon	28.2	30.8	17.3	27.3	31.4	29.0
South Dakota	9.4	8.6	7.2	5.0	17.2	3.8
Texas	30.8	32.5	18.9	27.9	39.0	32.0
Utah	45.7	43.6	37.7	38.2	45.1	44.8
Washington	30.7	39.5	25.9	34.2	38.9	39.7
Wyoming	14.3	14.5	9.5	13.8	17.3	14.8

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Current participation" defined as those who participated in the past 12 months.

Table A-146. Percent of past participants within latent demand[1] for wildlife recreational activity groups in the past.

State	Fishing	Hunting	Wildlife viewing
Alaska	87.4	63.9	53.1
Arizona	89.2	72.0	51.0
California	82.5	58.4	46.9
Colorado	93.1	62.7	51.5
Hawai`i	82.6	46.0	43.2
Idaho	94.1	77.5	54.4
Kansas	89.6	71.3	40.8
Montana	90.3	80.5	49.9
Nebraska	90.0	67.1	50.6
Nevada	91.3	67.3	49.6
New Mexico	89.4	68.9	52.0
North Dakota	88.4	68.1	41.1
Oklahoma	89.5	69.6	45.6
Oregon	91.7	73.9	58.7
South Dakota	89.5	78.6	49.3
Texas	88.5	71.0	50.4
Utah	91.1	78.0	54.6
Washington	92.4	61.5	49.5
Wyoming	88.1	74.9	57.1

[1] "Latent demand" defined as those who did not participate in the past 12 months but who indicated they are "slightly interested," "moderately interested," or "strongly interested" in participating in the future. "Past participation" defined as those who ever participated in the past.

Table A-147. Percent of respondents indicating it is likely they would "consider taking a trip to Africa to go on a safari to view wildlife" by state.

State	Not at all likely	Slightly likely	Moderately likely	Extremely likely
Alaska	50.4	19.1	13.3	17.2
Arizona	51.2	21.7	9.6	17.4
California	44.8	19.6	14.8	20.8
Colorado	45.3	24.0	16.6	14.2
Hawai`i	48.3	19.9	17.4	14.4
Idaho	61.5	16.2	9.6	12.7
Kansas	58.9	19.0	10.4	11.7
Montana	58.6	17.4	11.5	12.5
Nebraska	54.6	18.5	14.0	12.9
Nevada	52.5	17.9	16.6	13.0
New Mexico	50.1	19.3	16.0	14.6
North Dakota	64.2	16.9	10.5	8.4
Oklahoma	55.5	18.7	12.0	13.8
Oregon	53.0	20.8	13.1	13.1
South Dakota	58.4	19.6	11.3	10.7
Texas	49.3	19.4	13.6	17.7
Utah	53.9	21.5	15.6	8.9
Washington	49.0	19.5	15.8	15.8
Wyoming	61.4	16.1	11.9	10.6

Table A-148. Percent of respondents indicating it is likely they would "consider taking a trip to a remote area in Alaska to view wildlife" by state.

State	Not at all likely	Slightly likely	Moderately likely	Extremely likely
Alaska	15.0	18.5	26.2	40.3
Arizona	26.0	21.6	25.8	26.6
California	21.1	22.2	26.4	30.2
Colorado	19.2	25.0	27.5	28.3
Hawai`i	29.8	25.8	21.0	23.4
Idaho	26.9	22.8	25.6	24.7
Kansas	30.8	24.2	25.3	19.8
Montana	27.0	23.1	26.1	23.8
Nebraska	26.4	24.4	26.4	22.8
Nevada	26.5	23.3	23.8	26.4
New Mexico	23.4	21.2	27.6	27.8
North Dakota	35.0	24.6	20.3	20.1
Oklahoma	32.3	21.3	20.8	25.5
Oregon	25.2	23.3	26.9	24.6
South Dakota	27.7	25.3	25.7	21.3
Texas	30.5	23.1	19.9	26.5
Utah	23.5	22.3	29.1	25.1
Washington	19.4	22.4	28.0	30.2
Wyoming	28.0	19.7	26.0	26.3

Table A-149. Respondent gender by state represented by percentages.

State	Male	Female
Alaska	51.6	48.4
Arizona	48.5	51.5
California	51.9	48.1
Colorado	50.1	49.9
Hawai`i	49.1	50.9
Idaho	51.4	48.6
Kansas	47.7	52.3
Montana	54.6	45.4
Nebraska	54.2	45.8
Nevada	53.4	46.6
New Mexico	49.7	50.3
North Dakota	50.2	49.8
Oklahoma	48.0	52.0
Oregon	46.3	53.7
South Dakota	49.5	50.5
Texas	50.1	49.9
Utah	56.3	43.7
Washington	52.5	47.5
Wyoming	50.5	49.5

Table A-150. Average respondent age in years by state.

State	Mean	Standard Deviation
Alaska	44.61	14.27
Arizona	47.39	17.15
California	45.83	17.43
Colorado	46.51	15.41
Hawai`i	47.59	16.82
Idaho	46.68	17.76
Kansas	46.79	17.05
Montana	47.80	16.87
Nebraska	46.85	16.59
Nevada	47.04	15.71
New Mexico	46.95	16.54
North Dakota	47.32	17.96
Oklahoma	47.01	17.27
Oregon	47.76	16.67
South Dakota	47.67	17.75
Texas	45.68	15.93
Utah	43.65	16.42
Washington	46.33	16.28
Wyoming	47.10	16.31

Table A-151. Respondent average number of children by state.

State	Mean	Standard Deviation
Alaska	0.80	1.16
Arizona	0.73	1.14
California	0.61	1.14
Colorado	0.69	1.11
Hawai`i	0.72	1.00
Idaho	0.92	1.34
Kansas	0.71	1.07
Montana	0.66	1.03
Nebraska	0.79	1.07
Nevada	0.71	1.06
New Mexico	0.67	1.04
North Dakota	0.60	1.03
Oklahoma	0.76	1.10
Oregon	0.54	0.93
South Dakota	0.77	1.11
Texas	0.70	1.05
Utah	1.25	1.48
Washington	0.72	1.08
Wyoming	0.81	1.20

Table A-152. Respondent highest level of education attained by state represented by percentages.

State	Less than high school diploma	High School diploma or GED	2 year associate degree or trade school	4 year college degree	Advanced degree
Alaska	2.4	27.5	24.7	27.2	18.2
Arizona	1.9	22.7	22.5	28.8	24.2
California	1.3	20.2	17.5	30.9	30.1
Colorado	1.3	18.4	16.8	36.3	27.2
Hawai`i	1.1	20.2	22.9	32.4	23.4
Idaho	3.1	30.3	24.5	27.9	14.2
Kansas	1.9	26.6	17.3	33.5	20.7
Montana	2.6	27.7	20.6	32.0	17.1
Nebraska	1.7	30.3	19.5	31.7	16.9
Nevada	1.8	26.5	26.5	27.9	17.4
New Mexico	1.2	22.0	23.8	26.1	26.9
North Dakota	4.3	28.8	24.3	29.6	12.9
Oklahoma	4.7	26.8	21.7	28.0	18.8
Oregon	1.8	21.8	23.6	32.4	20.3
South Dakota	4.6	31.9	21.3	27.4	14.8
Texas	1.5	20.3	22.4	30.9	24.9
Utah	1.2	21.0	27.0	32.6	18.3
Washington	2.2	19.4	18.3	36.2	23.9
Wyoming	3.4	26.7	25.0	27.6	17.2

Table A-153. Respondent household income by state represented by percentages.

State	Less than $10,000	$10,000-29,999	$30,000-49,999	$50,000-69,999	$70,000-89,999	$90,000-109,999	$110,000-129,999	$130,000-149,999	$150,000 or more
Alaska	5.0	15.1	20.8	21.0	14.1	9.5	5.2	3.8	5.4
Arizona	2.8	11.0	23.4	21.8	15.4	8.3	7.4	2.1	7.8
California	2.2	19.8	21.9	15.3	11.0	11.2	4.3	4.3	10.2
Colorado	1.7	10.6	24.1	22.7	15.7	10.1	5.0	3.2	6.8
Hawai`i	4.8	10.2	20.7	21.9	17.1	10.5	5.9	2.9	6.0
Idaho	4.2	22.2	25.2	20.7	12.7	7.8	2.1	0.9	4.2
Kansas	2.3	21.1	26.4	20.7	13.0	7.5	4.6	1.7	2.7
Montana	6.4	20.8	28.2	22.4	11.0	5.1	2.5	0.6	2.9
Nebraska	3.9	20.1	20.6	23.8	15.3	7.0	4.8	1.2	3.4
Nevada	3.9	14.0	21.9	21.7	17.3	8.8	5.7	1.6	5.1
New Mexico	5.5	18.6	22.8	17.6	12.7	9.9	4.5	1.5	6.8
North Dakota	5.1	19.6	31.2	20.4	13.0	4.8	1.6	1.4	2.7
Oklahoma	5.2	22.6	27.4	17.5	10.8	8.8	2.9	2.0	2.9
Oregon	4.1	18.2	24.3	20.9	14.0	9.4	4.5	1.1	3.6
South Dakota	4.0	24.1	26.7	20.0	13.3	5.6	1.5	0.8	4.0
Texas	2.7	13.7	23.3	19.8	16.4	10.6	4.8	1.0	7.7
Utah	2.4	17.2	28.4	20.1	13.7	7.0	3.3	2.7	5.1
Washington	2.5	12.9	22.1	20.2	14.3	10.2	7.4	3.5	7.0
Wyoming	3.6	18.7	28.0	20.5	13.8	8.0	3.7	1.2	2.5

Table A-154. Respondent average length of residency in years by state.

State	Mean	Standard Deviation
Alaska	23.70	16.34
Arizona	19.87	15.73
California	28.42	20.59
Colorado	25.36	19.45
Hawai`i	31.80	21.64
Idaho	28.32	20.18
Kansas	33.47	20.17
Montana	31.28	20.65
Nebraska	35.23	20.41
Nevada	15.02	14.22
New Mexico	24.56	17.90
North Dakota	35.60	22.07
Oklahoma	33.33	20.83
Oregon	29.28	20.97
South Dakota	34.56	21.68
Texas	30.15	18.98
Utah	30.08	19.51
Washington	28.02	20.01
Wyoming	28.01	19.22

Table A-155. Respondent current community size by state represented by percentages.

State	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Alaska	23.5	4.9	9.3	16.5	7.0	9.1	23.1	6.6
Arizona	60.5	12.0	6.7	8.2	6.4	2.4	1.9	1.9
California	41.1	16.0	14.7	11.5	7.2	5.9	1.5	2.0
Colorado	40.8	18.3	14.0	5.2	6.5	5.2	3.3	6.7
Hawai`i	31.8	7.1	10.4	14.0	17.5	10.9	5.3	3.0
Idaho	9.9	18.3	20.5	16.1	8.2	8.2	7.2	11.8
Kansas	25.0	14.2	12.6	8.7	10.3	6.3	10.5	12.4
Montana	1.3	9.4	27.5	17.4	6.9	11.1	13.8	12.6
Nebraska	36.6	11.1	2.7	10.5	7.0	7.5	13.2	11.3
Nevada	63.8	9.2	5.9	5.3	6.1	3.8	3.1	2.8
New Mexico	37.6	6.0	20.3	10.8	11.1	5.4	4.1	4.7
North Dakota	2.0	15.5	25.5	12.4	11.1	4.9	14.6	14.1
Oklahoma	26.1	8.9	11.5	12.8	12.5	8.3	9.6	10.2
Oregon	28.1	14.6	14.0	11.6	11.2	7.9	4.4	8.2
South Dakota	1.6	18.1	16.7	6.0	17.4	6.3	19.4	14.6
Texas	41.5	14.3	12.5	11.2	6.9	3.1	5.6	4.8
Utah	23.0	17.7	19.3	12.0	12.6	9.0	4.4	1.9
Washington	28.6	16.8	18.1	11.4	8.9	6.4	2.9	6.9
Wyoming	0.4	0.5	30.1	16.9	20.7	17.6	6.7	7.1

Table A-156. Respondent childhood community size by state represented by percentages.

State	Large city with 250,000 or more people	City with 100,000 to 249,999 people	City with 50,000 to 99,999 people	Small city with 25,000 to 49,999 people	Town with 10,000 to 24,999 people	Town with 5,000 to 9,999 people	Small town/village with less than 5,000 people	A farm or rural area
Alaska	17.6	7.4	11.0	10.4	10.8	9.9	19.9	13.0
Arizona	38.0	11.5	10.0	6.7	10.2	6.3	9.5	7.8
California	27.3	12.5	15.7	12.5	12.3	7.4	5.7	6.6
Colorado	29.3	10.9	12.7	11.5	9.1	6.4	7.2	12.9
Hawai`i	28.9	13.3	10.5	8.7	13.6	8.0	9.9	7.1
Idaho	13.7	9.3	9.5	12.2	10.0	8.1	15.8	21.4
Kansas	18.3	11.5	7.3	9.5	7.5	8.3	14.9	22.6
Montana	9.8	6.8	14.7	13.4	8.2	9.3	19.5	18.2
Nebraska	21.3	8.2	3.6	9.5	9.9	10.2	16.2	21.2
Nevada	30.9	12.4	7.8	12.2	9.3	7.5	12.0	7.8
New Mexico	27.4	9.8	8.6	9.8	15.0	7.3	10.7	11.4
North Dakota	4.5	6.9	11.7	8.2	9.1	5.2	24.0	30.5
Oklahoma	19.0	7.8	8.1	10.7	11.2	10.1	14.2	18.8
Oregon	21.6	8.5	8.3	13.3	13.3	8.7	12.7	13.6
South Dakota	7.2	9.0	8.8	3.5	9.3	7.5	25.5	29.1
Texas	34.0	12.7	9.0	10.4	7.6	4.1	11.1	11.1
Utah	18.6	15.5	12.0	12.2	10.2	10.8	9.7	11.0
Washington	25.3	11.5	13.4	11.9	10.7	8.6	6.2	12.5
Wyoming	8.3	4.1	12.8	12.4	14.5	14.0	15.5	18.3

Table A-157. Respondent perceived suburban residence by state represented by percentages.

State	Current residence	Childhood residence
Alaska	21.4	26.9
Arizona	55.5	41.7
California	52.0	43.1
Colorado	46.9	38.4
Hawai`i	53.7	50.7
Idaho	27.5	24.1
Kansas	35.5	21.8
Montana	14.8	17.2
Nebraska	24.6	19.1
Nevada	51.7	37.8
New Mexico	23.7	24.3
North Dakota	8.3	9.1
Oklahoma	38.3	28.0
Oregon	32.9	29.4
South Dakota	12.3	8.4
Texas	48.2	32.4
Utah	55.8	44.9
Washington	43.3	38.8
Wyoming	7.8	14.9

APPENDIX B. PROJECT BACKGROUND AND METHODS

Project History and Development

"Wildlife Values in the West 2004" is a project of the Western Association of Fish and Wildlife Agencies (WAFWA) Human Dimensions Committee in cooperation with Colorado State University. The project was borne from committee members' discussions about human dimensions surveys previously conducted by individual WAFWA wildlife agencies. From a review of these existing studies, certain conclusions had become apparent: 1) these studies were largely descriptive in nature, designed to address a specific issue or set of issues at a single point in time, and were therefore limited in their ability to answer "big picture" kinds of questions such as why changes in public reactions to management are occurring, and 2) these studies, while useful in informing state-specific management decisions, lacked a consistent approach that would allow for comparability of results across states in the region. It was concluded that greater comparability could contribute to building a broader body of knowledge regarding how various publics perceive and respond to key regional issues. It could also inform agencies about similarities and differences between their publics and other states' publics to identify areas where collaboration on human dimensions efforts may be useful and more efficient.

The WAFWA Human Dimensions Committee concluded that it would be beneficial for WAFWA agencies to engage in a collaborative effort that would not only address questions related to immediate issues and challenges facing the agencies but that could also begin to identify longer-term root causes of conflict and change in wildlife management. Such an effort would allow for comparability of findings across states and contribute to a greater understanding of trends evident at the regional level. The committee, working with Colorado State University, began the process of developing and refining a study proposal.

In 2000, the project moved forward as six states (Alaska, Arizona, Colorado, Idaho, North Dakota, and South Dakota) volunteered to participate in and fund a "pilot," or demonstration, phase of this project. The **pilot phase** of Wildlife Values in the West was completed in 2002. A project report from this effort was released in January 2003 (see Teel, Bright, & Manfredo, 2003). In addition to providing participating states with important information about the make-up of their publics and about public reactions to key regional and state-specific management issues, the pilot phase allowed for the testing and refinement of an approach to be applied in the larger multi-state effort.

Coinciding with completion of the pilot phase, the proposal for a survey of all the WAFWA states/provinces was submitted via the 2002 Multistate Conservation Grant Program administered by the International Association of Fish and Wildlife Agencies (IAFWA) and was approved for funding in 2003. Data reported here were collected via mail-back surveys administered by Colorado State University in each of the 19 participating WAFWA member states in the Fall of 2004.

Meetings of the Project Work Group to Identify Research Needs

Participating state agency representatives and Colorado State University researchers gathered as a group on several occasions to define state agency research needs, develop and refine survey questions, and discuss project logistics.

At the first meeting of the work group in Port Angeles, Washington (July, 2003), state agency representatives were given a review of the purpose and conceptual framework associated with the project. This discussion included an overview of pilot phase findings and an identification of participant roles at various stages in the current project. To begin to define regional issues to be addressed on the survey, state agency representatives were asked to identify some of the top issues facing their states and potentially other western states at this meeting.

The purpose of the second meeting of the work group in Las Vegas, Nevada (October, 2003) was to review and clarify project methodology, and to select regional issues and associated draft survey questions for inclusion on the survey. State agency representatives were also given the opportunity at this meeting to obtain feedback from other members of the work group on draft state-specific questions they wanted to include on the survey.

At the second meeting in Las Vegas, an interest was expressed by members of the work group in finding ways to use information gathered with this survey to inform the development of state Comprehensive Wildlife Conservation Strategies (CWCS). As a result of this discussion, a workshop was scheduled in Fort Collins, Colorado (December, 2003), bringing together a small group of state agency representatives as well as researchers at Colorado State University to determine specifically how the survey could help the CWCS effort. The following benefits of Wildlife Values in the West 2004 to the CWCS process were identified as a result of this meeting: (1) provide an understanding of the diversity of public values as a context for future species conservation efforts, (2) anticipate public response to proposed "conservation actions," (3) address broad public participation needs, and (4) identify public "priorities of greatest conservation need" and public perceptions related to biodiversity.

The Survey Instrument

The survey instrument for this project was divided into two parts: 1) a regional section, and 2) a state-specific section. The focus of this report is on providing results from the regional section of the survey. Findings pertaining to the state-specific section are available upon request from participating states.

State-Specific Section

The state-specific section provided an opportunity to gather information about key, timely management issues affecting a particular state. The questions appearing in this part of the survey were developed by each participating state, with input and suggestions from Colorado State University and other members of the project work group.

Regional Section

The purpose of the regional section of the survey, which was the same across all states, was to measure public values and wildlife value orientations, sociodemographic characteristics, and participation in wildlife-related recreation activities among residents of each state. The regional section also contained questions addressing public reactions to key "regional" wildlife management issues deemed important across a majority of participating states. Criteria for issue selection were not geared toward development of a comprehensive list of regional issues but rather were based more on an intention to provide meaningful information in the context of broad study goals. Issues were selected largely on the basis of their ability to provide information about how changes in public values could affect responses to management issues and decisions. Thus, while not all issues were expected to have immediate and direct relevance to every state, they were intended to allow for generalizations to be made about how different publics might react to wildlife management strategies. Questions appearing in the regional section were developed by Colorado State University in cooperation with participating state agency representatives.

Below is a description of each of the **regional issues** identified by the work group and how they were represented on the survey.

1. *Funding and Programming Approach* – This regional issue involves an examination of philosophical orientations toward paying for the management of wildlife. Specifically, it explores public sentiment regarding funding approaches that take into account who pays for wildlife management as well as who benefits through programs provided by the agencies. Respondents were asked to read about a series of alternative approaches to funding and select which one they thought represented *how things are now* in their state and then select which one best represented their opinions of *how things should be* in their state.

2. *Public Involvement Philosophy* – This regional issue centers around the extent to which the public feels its opinions and interests are heard and adequately represented in wildlife management decisions. It also involves the determination of whether or not people have an interest in providing input and if they feel that input will make a difference. Respondents to the survey were asked to rate their level of agreement with a series of statements that reflected their beliefs about this issue.

3. *Trust in Government* – This regional issue focuses on the extent to which members of the public trust certain forms of government, including federal and state governments, as well as state fish and wildlife agencies. Respondents were asked to indicate their level of trust for each form of government on a scale ranging from "almost never" to "almost always."

4. *Population-Level Techniques to Address Human-Wildlife Conflict* – This regional issue focuses on public acceptance of population-level wildlife management actions in the context of specific human-wildlife conflict situations. Specifically, respondents were asked to rate the acceptability of a series of population-level control mechanisms that could be used to address certain situations that differ by target wildlife species (i.e., deer

v. black bear) and by level of severity (e.g., nuisance-type situation v. threat to human health and safety).

5. *Managing for Biodiversity and Species of Concern* – A specific need identified in the context of preparing for the development of states' CWCS's was an ability to determine how people perceive the issue of biodiversity. For example, questions that were raised by participating states include (a) how do people value biodiversity over other guiding management philosophies? (b) do people think that agencies should manage primarily for game species to provide hunting and fishing opportunities, or should the focus be more on providing a broad array of species? (c) does the public value managing for native species, or is it okay to allow non-natives to thrive in an area? (d) is restoration of native species acceptable even if it means that popular non-native species may suffer (e.g., cutthroat v. brown trout)?

The December, 2003 workshop participants discussed different approaches to measuring public perceptions of biodiversity, and determined that there are complex *choices* managers must make related to managing for biodiversity – choices that can be addressed on a survey. These participants identified what could be termed *categories of difficult choices* believed to be *related* to the topic of biodiversity. The categories reflected the kinds of choices that managers may be faced with when trying to determine what should receive the greatest management attention. A series of survey questions was developed to address each of these categories, including: (1) game v. non-game, (2) species status (common v. declining v. extirpated / requiring reintroduction), and (3) native v. non-native.

Pretest

Pretesting occurred following development and review of the survey instrument. It applied many of the same survey administration methods proposed for the actual data collection stage of the project and occurred in all participating states.

The objectives and methods for the pretest are described below.

Objectives:

1. Test the overall strategy for data collection (i.e., survey administration methods)

2. Estimate response rate

3. Estimate potential response bias – determine if certain population subgroups are over- or under-represented in respondent samples (e.g., subgroups defined by age, gender, participation in wildlife-related recreation)

4. Identify possible wording problems and problems that may be associated with specific response options for both regional and state-specific questions (i.e., are participants having difficulty responding to particular questions?)

5. Test the internal consistency of regional questions – determine if multiple questions designed to measure a certain variable (e.g., values) significantly relate to one another in a consistent pattern

6. Test the predictive validity of certain constructs – determine how variables measured in the regional section relate to other variables included in the survey (e.g., do values and wildlife value orientations significantly explain differences in levels of support for specific management strategies as we would expect?)

Methods and Conclusions:

Prior to pretesting, a sample of 320 residents from each state was purchased from Survey Sampling, Inc, a commercial sampling firm. Samples were stratified on the basis of age (3 age groups: 18-34, 35-54, 55+) to ensure adequate representation of population subgroups as compared to state census information. Specifically, information to identify representation of age groups was based on U.S. Census 2000 (U.S. Census Bureau, 2002) projections to the year 2003 that were formulated by Scan/US, Inc. and provided to Survey Sampling, Inc.

Pretesting occurred in a series of stages listed below.

Stage	**Time Frame**
I. Phone screening administration	May 16 – June 3, 2004
II. Mail-back survey administration: 1st Mailing (3 waves)[1]	May 28, June 1 & 7
III. Mail-back survey administration: Reminder Postcard Mailing	June 14, 15, & 21
IV. Mail-back survey administration: 2nd Mailing	June 28 & 29, July 6

[1]Surveys (along with cover letters and return envelopes) were mailed out in waves, each of which consisted of a different set of states. This allowed for adequate time to complete all phone screening without an overall delay in mail survey administration. A modified Dillman (2000) approach, consisting of multiple mailings, was used to maximize response to the mail survey. Times between mailings did not always equal the recommended length of ten days to two weeks due to federal holidays (e.g., July 4).

All survey administration for the pretest, including phone screening, occurred from Colorado State University. Phone screening involved a survey by telephone of residents in each state. The survey measured the following: basic beliefs about wildlife and wildlife management, age, gender, and participation in wildlife-related recreation activities (fishing, hunting, viewing) over the past year. The purpose of the phone survey was to (a) identify members of the sample who were willing to complete the mail survey, (b) possibly increase response rates for the mail survey, (c) collect information ahead of time to allow for comparisons between nonrespondents and respondents to the mail survey, and (d) attempt to ensure proper representation of population subgroups (e.g., gender and age groups).

Following analysis of pretest data in July, 2004, Colorado State University researchers met or spoke by phone with participating state agency representatives to review pretest findings and suggest changes to survey items where necessary. In addition to making changes to certain

items, the decision was made on the basis of pretest findings to not include phone screening as a method of final data collection as it did not result in substantial improvements to the overall approach. Alternatively, Colorado State University researchers decided it would be more cost-effective to increase the size of state samples purchased from Survey Sampling, Inc. for purposes of final data collection. Another discovery from the pretest was that, despite stratification by age, younger age groups were underrepresented in respondent samples as compared to proportions reported by census data. The decision was made therefore to adjust the proportion each age group represented in the samples requested from Survey Sampling, Inc. for final data collection.

Sampling

Prior to actual data collection, a sample of between 3000 and 5000 residents from each state was purchased from Survey Sampling, Inc. Information about response rates by state obtained from the pretest allowed a determination of these numbers on the basis of approximately how many surveys would need to be mailed out to target for a minimum of 400 completed surveys per state. This number of surveys allows for population estimates within + or - 5% at the 95% confidence level.

As was the case for the pretest, samples were stratified on the basis of age (3 age groups: 18-34, 35-54, 55+) to ensure adequate representation of population subgroups as compared to state census information. Based on pretest findings regarding the underrepresentation of younger age groups, the decision was made to oversample in the 18-34 age category by 5% (i.e., increase the sample of the 18-34 age category by 5% of the total sample) and to undersample in the 55+ group by this amount for each state. Information to identify representation of age groups was based on U.S. Census 2000 (U.S. Census Bureau, 2002) projections to the year 2003 that were formulated by Scan/US, Inc. and provided to Survey Sampling, Inc.

Timing and Methods of Data Collection

Data collection occurred via administration of a mail-back survey to a sample of residents in each state in the Fall of 2004. All survey administration, including preparation of mailings (e.g., addressing and envelope stuffing), occurred from Colorado State University.

Mailings occurred in the following three stages:

Stage	**Time Frame**
I. 1st Full Mailing of Survey and Cover Letter	October 7-26, 2004
II. Reminder Postcard	October 29–November 12
III. 2nd Full Mailing of Survey and Cover Letter (administered to individuals who did not respond to the 1st mailing)	November 8-23

Mailings in each stage occurred in waves, each of which consisted of a specific set of states. This allowed for adequate time to prepare for subsequent mailings and to arrange for postal service pick-up and delivery without an overall delay in mail survey administration. A modified Dillman (2000) approach, consisting of multiple mailings, was used to maximize response to the mail survey. Time periods between mailings were extended beyond the recommended length of ten days to two weeks for some states (e.g., Hawaii) to ensure sufficient time for delivery and return of surveys.

Surveys and cover letters were designed to portray the project as a joint effort among WAFWA, participating state fish and wildlife agencies, and Colorado State University. As an example, cover letters contained contact information for representatives at Colorado State University as well as the participating state agency. Additionally, the cover of the survey contained logos for each sponsor.

To attempt to ensure relatively equal representation across gender, half of the first mailing cover letters sent to residents in each state requested participation by a female in the household, and half requested participation by a male in the household. An attempt was also made to encourage those who do not participate in wildlife-related recreation and/or who are not actively involved in wildlife-related issues to complete the survey. Specifically, we attached a yellow "post-it" note to the front of each survey containing the following message: "Even if you know little about wildlife, your opinions are needed." This message was re-stated on the cover of the survey and prefaced with the statement, "this survey is for <u>all</u> citizens of your state." Cover letters also emphasized the desire to involve non-participants by stating that even if a potential respondent did not hunt or fish, his or her input was still important to us.

Surveys were returned to Colorado State University where data were then entered into Microsoft Excel files which were in turn converted for analysis and reporting into SPSS® 13.0 (SPSS, Inc., 2004) files. In total, 12,673 completed surveys – over 400 for each of the 19 participating states – were returned to CSU. This allowed for generalization to state populations at the target level of confidence (95%) and error rate (+ or – 5%) for population estimates. See **Appendix C** for detailed information about number of completed surveys and response rates by state.

<u>Nonresponse Check via Telephone Survey</u>

A sample of residents in each state who did not respond to the mail survey was contacted by phone following data collection. Calls were made by PhoneBase Research, Inc. (a telephone interviewing firm in Fort Collins, Colorado) in December, 2004 and January, 2005, with a break to account for holidays. The purpose of this effort was to obtain responses to a few key questions from the mail survey, including selected items designed to assess basic beliefs about wildlife, recent participation in wildlife-related recreation, and socio-demographic characteristics. The phone survey allowed for comparisons to determine if differences existed between respondents and nonrespondents to the mail survey on key variables of interest to the study. The phone survey also provided information useful to developing an in-depth understanding of nonrespondent characteristics and factors affecting nonresponse to the mail survey.

A total of 7,388 individuals who did not respond to the mail survey completed the telephone survey. In the context of certain comparisons between respondents and nonrespondents to the mail survey, differences were noted and were addressed through weighting procedures described in **Appendix E**. More detailed information regarding the phone survey (e.g., response rates) and findings from respondent-nonrespondent comparisons can be found in **Appendix D**.

Measurement of Key Concepts

A. Wildlife Value Orientations

Wildlife value orientations were measured following the approach used by Fulton, Manfredo, and Lipscomb (1996). In this approach, value orientations are identified by composite scales consisting of survey items that represent basic beliefs about wildlife and wildlife management. A set of items was identified to represent each of the belief dimensions described in Section II. Items were developed through extensive pretesting which occurred prior to implementation of the final survey instrument.

Pretesting began in 2002 with the pilot phase of Wildlife Values in the West and continued in the Summer of 2004 at which time the survey instrument for the larger multi-state effort was mailed to a sample of residents in each of the 19 participating states. A phone survey consisting of basic belief items administered to a sample of Colorado residents was also conducted in the Summer of 2004 to allow for further refinement and testing of this methodology.

Reliability and Creation of Scales

Table B-1 provides a listing of the items corresponding to each basic belief dimension and reports the reliability of belief dimension and value orientation scales. Value orientation scale scores were computed in a two stage process. First, items were grouped into their basic belief dimension and tested for internal consistency using Cronbach's alpha. Results indicated high internal consistency for basic belief item clusters (Table B-1; Nunnally & Bernstein, 1994). Respondents were given a score for each basic belief dimension, computed as the mean of all items within that dimension.

In the second stage, we assessed the reliability of value orientation scales – consisting of groupings of basic belief dimensions. These scales were also found to be highly internally consistent (Table B-1). Value orientation scores were assigned by computing the mean of their respective basic belief domain scale scores.

Confirmatory Factor Analysis (CFA) was conducted using Amos version 5.0.1 (Arbuckle, 2003) to further investigate the internal consistency of belief dimension and value orientation scales. This analysis provided additional evidence of the reliability of value orientation constructs. Standardized factor loadings ranged from .41 to .85 (all t values were significant at $p < .001$) for items comprising the basic belief dimensions (Table B-2) and from .53 to .86 (all t values were significant at $p < .001$) for loadings of belief dimension scales on their respective utilitarian and mutualism value orientations (Table B-3).

A final analysis, Multidimensional Scaling (MDS), was conducted in SPSS® 13.0 (SPSS, Inc., 2004) to examine relationships and patterns among belief items and their corresponding scales. The goal of MDS is to detect meaningful underlying "dimensions" that help explain similarities or dissimilarities (i.e., "distances") between objects under investigation – in this case, the wildlife basic belief items (Kruskal & Wish, 1977; Young, 1985). MDS provides a visual representation of the pattern of proximities such that items perceived to be similar to one another are plotted close to each other on a map while items perceived to be very different from one another are placed far apart on the map.

Figure B-1 shows a visual display map containing results from the MDS. Each point on the map represents a basic belief item. There are two things to examine in interpreting an MDS map: (1) "clusters," and (2) "dimensions" (Borgatti, 1997). Clusters are groups of items that are close to one another, while dimensions, as defined in MDS, are item attributes that order the items in some fashion along a continuum on the map. We have included circles around groupings of items on the map to show how items cluster into sets which correspond to the hypothesized *basic belief dimensions* and value orientations described in Section II. In addition, the figure illustrates what appear to be two separate "continuums" that may be explained by the existence of two separate *value orientation dimensions*: (1) the mutualism-utilitarian value orientation dimension, and (2) the attraction-concern for safety value orientation dimension.

Table B-1. Reliability results for wildlife basic belief and value orientation dimensions.[1]

Wildlife value orientation *Basic belief dimension* Items comprising the basic belief dimension[2]	Cronbach's alpha
Utilitarian value orientation	.83
Utilitarian belief dimension	.78
Humans should manage fish and wildlife populations so that humans benefit.	
The needs of humans should take priority over fish and wildlife protection.	
It is acceptable for people to kill wildlife if they think it poses a threat to their life.	
It is acceptable for people to kill wildlife if they think it poses a threat to their property.	
It is acceptable to use fish and wildlife in research even if it may harm or kill some animals.	
Fish and wildlife are on earth primarily for people to use.	
Hunting belief dimension	.80
We should strive for a world where there's an abundance of fish and wildlife for hunting and fishing.	
Hunting is cruel and inhumane to the animals.[R]	
Hunting does not respect the lives of animals.[R]	
People who want to hunt should be provided the opportunity to do so.	
Mutualism value orientation	.86
Mutualism belief dimension	.82
We should strive for a world where humans and fish and wildlife can live side by side without fear.	
I view all living things as part of one big family.	
Animals should have rights similar to the rights of humans.	
Wildlife are like my family and I want to protect them.	
Caring belief dimension	.80
I care about animals as much as I do other people.	
It would be more rewarding to me to help animals rather than people.	
I take great comfort in the relationships I have with animals.	
I feel a strong emotional bond with animals.	
I value the sense of companionship I receive from animals.	
Other belief dimensions	
Concern for Safety belief dimension	.82
If I had to walk in the outdoors, I would be worried about encountering a wild animal.	
I have concerns about being around wildlife because they may carry a disease.	
I have concerns about being around wildlife because they may hurt me.	
If I were around wildlife in the outdoors I would be uncomfortable.	
Attraction belief dimension	.63[3]
I am not interested in knowing anything more about fish and wildlife.[R]	
I am really not that interested in fish and wildlife.[R]	

[1]Consistent with requirements of procedures like those performed in Amos 5.0.1 (used later to further verify internal consistency; Arbuckle, 2003), unweighted data were used in reliability analysis. Reliability results using weighted data were not significantly different from what is reported above.
[2]Items were measured on a scale ranging from 1 = "strongly disagree" to 7 = "strongly agree."
[3]Inter-item correlation (Pearson's r). This measure of internal consistency is reported in place of Cronbach's alpha because the belief dimension scale consists of fewer than three items (Nunnally & Bernstein, 1994).
[R]Item reverse-coded prior to analysis.

Table B-2. Confirmatory Factor Analysis results for wildlife basic belief dimensions.[1]

Basic belief dimension Items comprising the basic belief dimension[2]	Standardized factor loading	Standard error	*t*-value[3]
Utilitarian belief dimension			
Humans should manage fish and wildlife populations so that humans benefit.	.57	.02	60.88
The needs of humans should take priority over fish and wildlife protection.	.66	.02	72.16
It is acceptable for people to kill wildlife if they think it poses a threat to their life.	.53	.01	56.26
It is acceptable for people to kill wildlife if they think it poses a threat to their property.	.69	.02	76.57
It is acceptable to use fish and wildlife in research even if it may harm or kill some animals.	.53	.02	55.57
Fish and wildlife are on earth primarily for people to use.	.67	.02	74.04
Hunting belief dimension			
We should strive for a world where there's an abundance of fish and wildlife for hunting and fishing.	.51	.02	54.13
Hunting is cruel and inhumane to the animals.[R]	.79	.02	94.48
Hunting does not respect the lives of animals.[R]	.81	.02	96.31
People who want to hunt should be provided the opportunity to do so.	.73	.01	84.44
Mutualism belief dimension			
We should strive for a world where humans and fish and wildlife can live side by side without fear.	.57	.02	62.08
I view all living things as part of one big family.	.73	.02	85.04
Animals should have rights similar to the rights of humans.	.81	.02	99.53
Wildlife are like my family and I want to protect them.	.82	.02	100.79
Caring belief dimension			
I care about animals as much as I do other people.	.53	.02	56.92
It would be more rewarding to me to help animals rather than people.	.41	.02	43.12
I take great comfort in the relationships I have with animals.	.84	.01	104.72
I feel a strong emotional bond with animals.	.72	.01	83.59
I value the sense of companionship I receive from animals.	.85	.01	106.34
Concern for Safety belief dimension			
If I had to walk in the outdoors, I would be worried about encountering a wild animal.	.66	.02	74.32
I have concerns about being around wildlife because they may carry a disease.	.65	.02	72.97
I have concerns about being around wildlife because they may hurt me.	.83	.01	100.57
If I were around wildlife in the outdoors I would be uncomfortable.	.77	.01	89.53
Attraction belief dimension			
I am not interested in knowing anything more about fish and wildlife.[R]	.75	.01	77.90
I am really not that interested in fish and wildlife.[R]	.84	.02	86.58

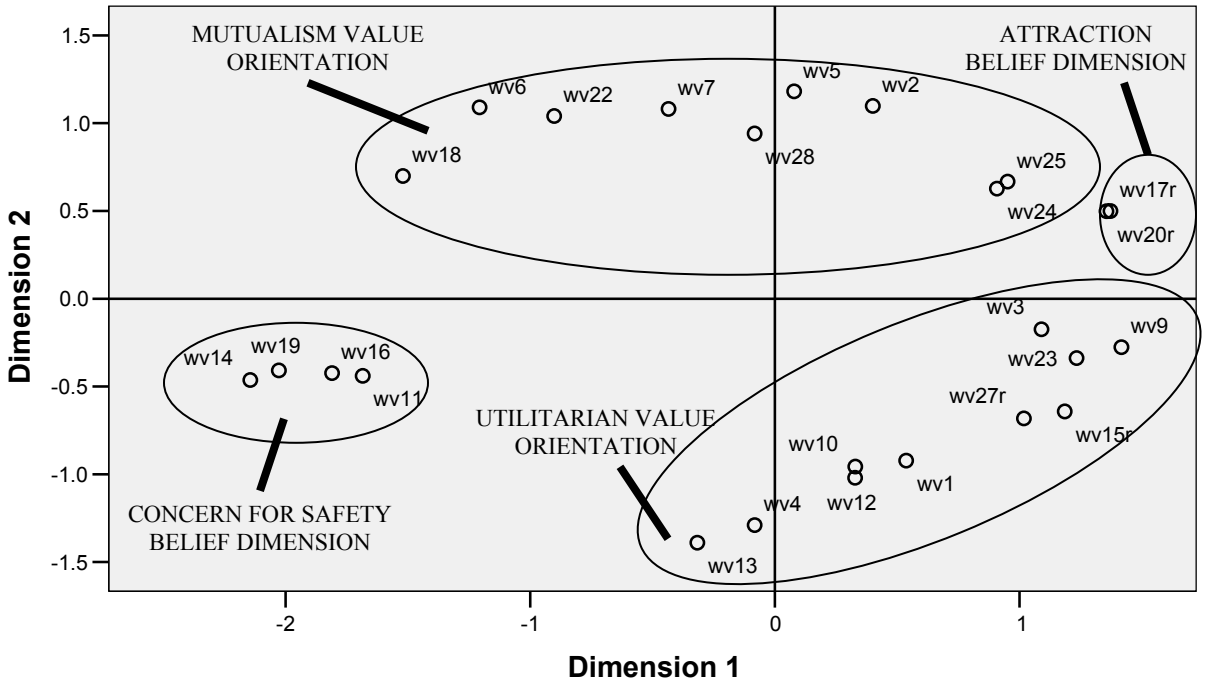
[1]Consistent with requirements of Amos 5.0.1 (Arbuckle, 2003), unweighted data were used in Confirmatory Factory Analysis.
[2]Items were measured on a scale ranging from 1 = "strongly disagree" to 7 = "strongly agree."
[3]All *t*-values were significant at $p<.001$.
[R]Item reverse-coded prior to analysis.

Table B-3. Confirmatory Factor Analysis results for wildlife value orientations.[1]

Wildlife value orientation dimension Basic belief dimensions[2]	Standardized factor loading	Standard error	*t*-value[3]
Utilitarian value orientation			
Utilitarian belief dimension	.86	.02	75.79
Hunting belief dimension	.53	.01	53.65
Mutualism value orientation			
Mutualism belief dimension	.82	.02	83.61
Caring belief dimension	.67	.01	69.77

[1]Consistent with requirements of Amos 5.0.1 (Arbuckle, 2003), unweighted data were used in Confirmatory Factory Analysis.
[2]Scales representing each belief dimension were created by taking the mean of responses to individual items within the dimension (see Tables B-1 and B-2 for listing of items).
[3]All *t*-values were significant at $p<.001$.

Figure B-1. Multidimensional Scaling results for wildlife basic belief items.



Validity

After establishing the reliability of basic belief dimension and value orientation scales, we examined the validity of these constructs in the context of their relationship with other key variables on the survey. Table B-4 reports correlations indicative of these relationships. Two general types of validity were explored using the information reported in the table (see Morgan, Gliner, and Harmon [2001] for a more detailed description of the types of validity).

1. Construct Validity

Based on our theory of wildlife value orientations, we would expect basic belief dimensions comprising a wildlife value orientation to be more highly correlated with each other than with belief dimensions corresponding to other orientations. Evidence of this would allow us to have confidence that our measures adequately reflect the theoretical constructs they are intended to represent. Table B-4 shows that the basic belief dimensions we measured do in fact relate to one another in this manner. There is a higher average correlation for comparisons of belief dimensions *within* wildlife value orientations (average $r = .54$) relative to the average for comparisons of belief dimensions with others *outside* the wildlife value orientations (average $r = .25$).

2. Predictive Validity

Theory and empirical evidence (e.g., Fulton et al., 1996) suggest that wildlife value orientations form the foundation for more specific attitudes and behaviors. They are also believed to be linked to more general or fundamental beliefs (e.g., values). To determine the utility of our revised model for wildlife value orientations, it would therefore be necessary to determine how well our measures relate to such constructs.

Table B-4 shows that the utilitarian and mutualism value orientations and their component scales are significantly related to concepts that theory would predict are associated with these orientations – correlations range from .22 to .66. Specifically, they are linked to measures of values, environmentalism, trust in the wildlife agency, and acceptability of lethal control as a wildlife management action, as well as to self-reported behaviors (i.e., participation in hunting). Stronger associations correspond to variables involving treatment of animals (e.g., hunting practices) and environmentalism.

Correlations for these comparisons were also found to be in the direction we would expect. As an illustration, hunting is believed to be rooted in a utilitarian orientation toward wildlife (Fulton et al., 1996). Table B-4 supports this notion in that a utilitarian value orientation, including its belief dimension components, is shown to be positively related to participation in hunting.

Our expectation with these comparisons was that belief scales included in the mutualism-utilitarian value orientation dimension (i.e., mutualism, caring, utilitarian, hunting) would be more strongly associated with many of the constructs of interest than the attraction and concern for safety belief dimensions. This assumption was based on prior research – for example, demonstrating greater predictive validity of protection-use over other orientations (e.g., wildlife appreciation) – as well as our contention that the mutualism and utilitarian orientations currently have a dominating effect upon thought about wildlife in contemporary society, particularly in the context of issues involving how wildlife should be treated. As Table B-4 illustrates, the mutualism and utilitarian dimensions and their component scales are in fact more strongly associated (i.e., larger correlations) in most instances with the selected variables than the attraction and concern for safety belief dimensions.

Table B-4. Correlations[1] at the regional level (all states combined) among wildlife basic belief value orientation scales and selected variables.

Variable	Utilitarian WVO	Utilitarian	Hunting	Mutualism WVO	Mutualism	Caring	Attraction	Concern for Safety
Utilitarian wildlife value orientation (WVO)	-	-	-	-.51	-.51	-.40	-.07	.01[N]
Utilitarian basic belief dimension	-	-	.51	-.56	-.52	-.48	-.24	.20
Hunting basic belief dimension	-	.51	-	-.34	-.37	-.24	.09	-.17
Mutualism wildlife value orientation (WVO)	-.51	-.56	-.34	-	-	-	.27	-.13
Mutualism basic belief dimension	-.51	-.52	-.37	-	-	.57	.19	-.04
Caring basic belief dimension	-.40	-.48	-.24	-	.57	-	.29	-.19
Attraction basic belief dimension	-.07	-.24	.09	.27	.19	.29	-	-.43
Concern for Safety basic belief dimension	.01[N]	.20	-.17	-.13	-.04	-.19	-.43	-
Materialist/Post-Materialist values[2]	-.38	-.43	-.24	.29	.29	.22	.20	-.19
Environmentalism[3]	-.52	-.57	-.36	.66	.63	.53	.26	-.10
Trust in state wildlife agency[4]	.19	.16	.17	-.09	-.08	-.08	.02[N]	-.01[N]
Acceptability of providing more opportunities to hunt bears when they enter residential areas and get into trash and pet food containers[5]	.51	.41	.47	-.32	-.33	-.23	<.01[N]	-.04
Participation in hunting ever[6]	.39	.26	.41	-.16	-.20	-.08	.18	-.21

[1]Unless otherwise noted, correlations are represented by Pearson's *r* and are significant at $p < .05$.

[2]Materialist/Post-Materialist values are represented in the form of a difference score variable in which a negative value indicates a tendency to emphasize Materialist concerns and a positive value indicates a tendency toward Post-Materialism. See information contained in this appendix for more detail on this measure.

[3]Environmentalism is represented through scoring on a set of three basic belief items designed to capture the extent to which people place greater priority on the environment over human needs and economic concerns. A higher value is associated with a greater level of environmentalism. See information contained in this appendix for more detail on this measure.

[4]Trust in the agency was measured on a 4-point response scale ranging from "almost never" to "almost always." See information contained in this appendix for more detail on this measure.

[5]Acceptability was measured as a dichotomous variable, with 0 = "unacceptable" and 1 = "acceptable." Correlations reported for this variable are point-biserial correlations. See Section IV for more information on this measure.

[6]Participation was measured as a yes (1) / no (0) variable. Correlations reported for this variable are point-biserial correlations.

[N]Correlation not significant at $p < .05$.

B. Materialist/Post-Materialist Values

Values were measured using an adaptation of the approach developed by Inglehart (1997). Respondents ranked a series of goal statements that represented either Materialist or Post-Materialist values (Table B-5). Goals were arranged in three choice sets, with each set containing two Materialist and two Post-Materialist goal statements. Respondents ranked goals within each set in order of importance from 1 ("most important") to 4 ("least important").

A Materialist/Post-Materialist index was developed by first summing the importance rankings on the Post-Materialist goal statements across all choice sets. The same procedure was also used to sum scores on all Materialist goal statements. The sum of Post-Materialist rankings was then subtracted from the sum of Materialist rankings. In the resultant Materialist/Post-Materialist index, a negative score indicated a Materialist values set, a positive score indicated a Post-Materialist values set, and a 0 was treated as "Mixed."

Several techniques were used to test the reliability and overall structure of the Materialist/Post-Materialist values index in SPSS® 13.0 (SPSS, Inc., 2004). First, items comprising the index were tested for internal consistency using Cronbach's alpha. Results indicate high internal consistency for the scale consisting of all items (Cronbach's alpha = .76; Nunnally & Bernstein, 1994). Next, consistent with an approach used by Inglehart (1997), we conducted a factor analysis examining the extent to which all items could be classified along a single values dimension. Results were identical to Inglehart's in that a single factor could be identified for which Materialist items loaded in a direction opposite to that of Post-Materialist items (Table B-6).

A final analysis, Multidimensional Scaling (MDS), was conducted to examine relationships and patterns among items included in the values index. The goal of MDS is to detect meaningful underlying dimensions that help explain similarities or dissimilarities (i.e., "distances") between objects under investigation – in this case, the values items (Kruskal & Wish, 1977; Young, 1985). MDS provides a visual representation of the pattern of proximities such that items perceived to be similar to one another are plotted close to each other on a map while items perceived to be very different from one another are placed far apart on the map.

Figure B-2 shows a visual display map containing results from the MDS. Each point on the map represents a values item. The figure illustrates what appear to be two "item clusters" that correspond to the two types of values – i.e., a Materialist item cluster and a Post-Materialist item cluster. These analyses in combination attest to the reliability of our measure for Materialist/Post-Materialist values as adapted from Inglehart's approach.

Table B-5. Items used to identify Materialists and Post-Materialists.

Goals[1]
Materialist[2]
Maintain a high level of economic growth
Make sure this country has strong defense forces
Maintain order in the nation
Fight rising prices
Maintain a stable economy
Fight crime
Post-Materialist
See that people have more to say about how things are done at their jobs and in their communities
Try to make our cities and countryside more beautiful
Give people more to say in important government decisions
Protect freedom of speech
Progress toward a less impersonal and more humane society
Progress toward a society in which ideas count more than money
Cronbach's alpha (all items) = *.76*

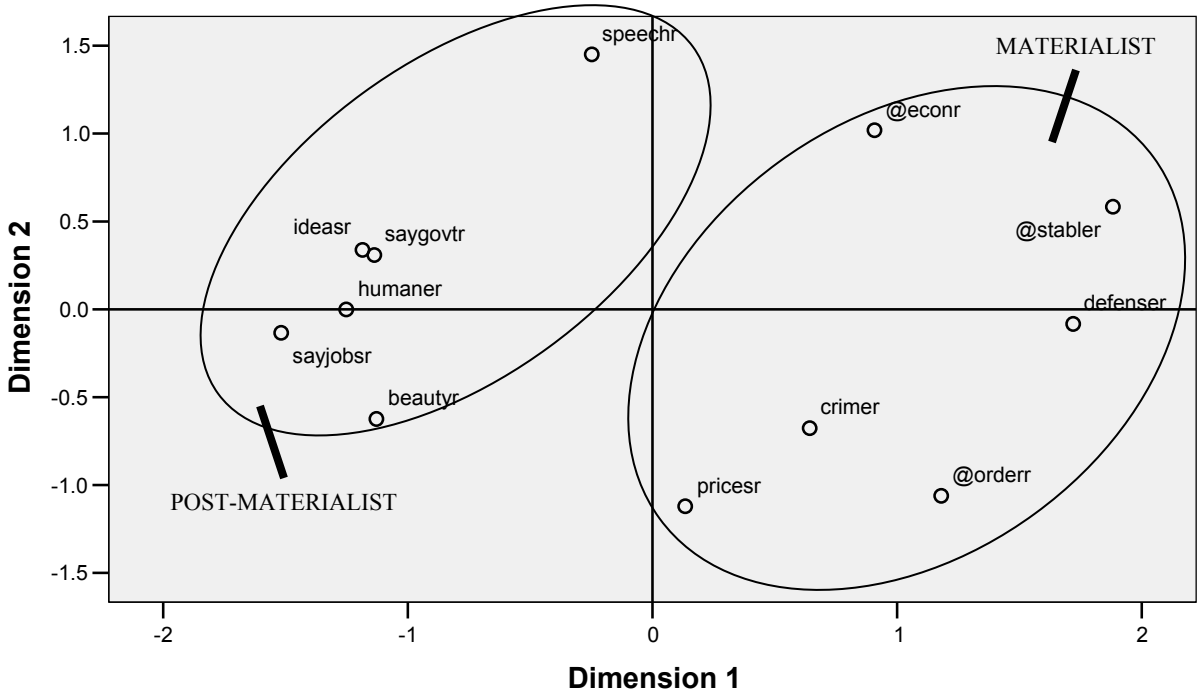
[1]All goals provided here were borrowed from Inglehart (1997) and ranked by respondents in three sets containing equal numbers of Materialist and Post-Materialist goals on a scale from 1=most important to 4=least important.
[2]These items were reverse coded prior to reliability analysis which was conducted using unweighted data.

Table B-6. Factor analysis results for Materialist/Post-Materialist values items.

Item[1]	Loadings on 1st principal component
Materialist	
Fight rising prices	-.21
Maintain a high level of economic growth	-.41
Fight crime	-.55
Maintain order in the nation	-.58
Make sure this country has strong defense forces	-.59
Maintain a stable economy	-.64
Post-Materialist	
See that people have more to say about how things are done at their jobs and in their communities	.68
Progress toward a less impersonal and more humane society	.64
Progress toward a society in which ideas count more than money	.63
Try to make our cities and countryside more beautiful	.48
Give people more to say in important government decisions	.48
Protect freedom of speech	.33

[1]Consistent with Inglehart's (1997) approach, items were recoded in the following manner prior to conducting factor analysis (Principal Components, No Rotation): 1 = goal selected as 1st choice, 2 = goal selected as 2nd choice, 3 = goal was selected as 3rd or 4th choice. Unweighted data were used to test relationships among items.

Figure B-2. Multidimensional Scaling results for Materialist/Post-Materialist values items.



Figures B-3 through B-5 display maps showing the representation of the three value types – i.e., Materialist, Post-Materialist, and Mixed – across participating states.

Between 50 and 71% of publics across states can be classified as Materialists. The highest percentages of these individuals are found in Texas, North Dakota, and Oklahoma, followed closely by Utah and South Dakota. The lowest representation is noted for Oregon, Washington, and California.

This pattern is reversed when looking at percentages of Post-Materialists across states. Oregon, Washington, and California – the states with the lowest percentages of Materialists – have the greatest representation of these individuals. Overall, between 20 and 44% of people across states can be categorized as Post-Materialists.

Individuals classified as Mixed with respect to their values represent between 5 and 10% of residents in the 19 participating states. States with a greater percentage of these individuals include Nebraska, Wyoming, and Kansas, while Texas reports the lowest.

Figure B-3. Percent of Materialists by state.

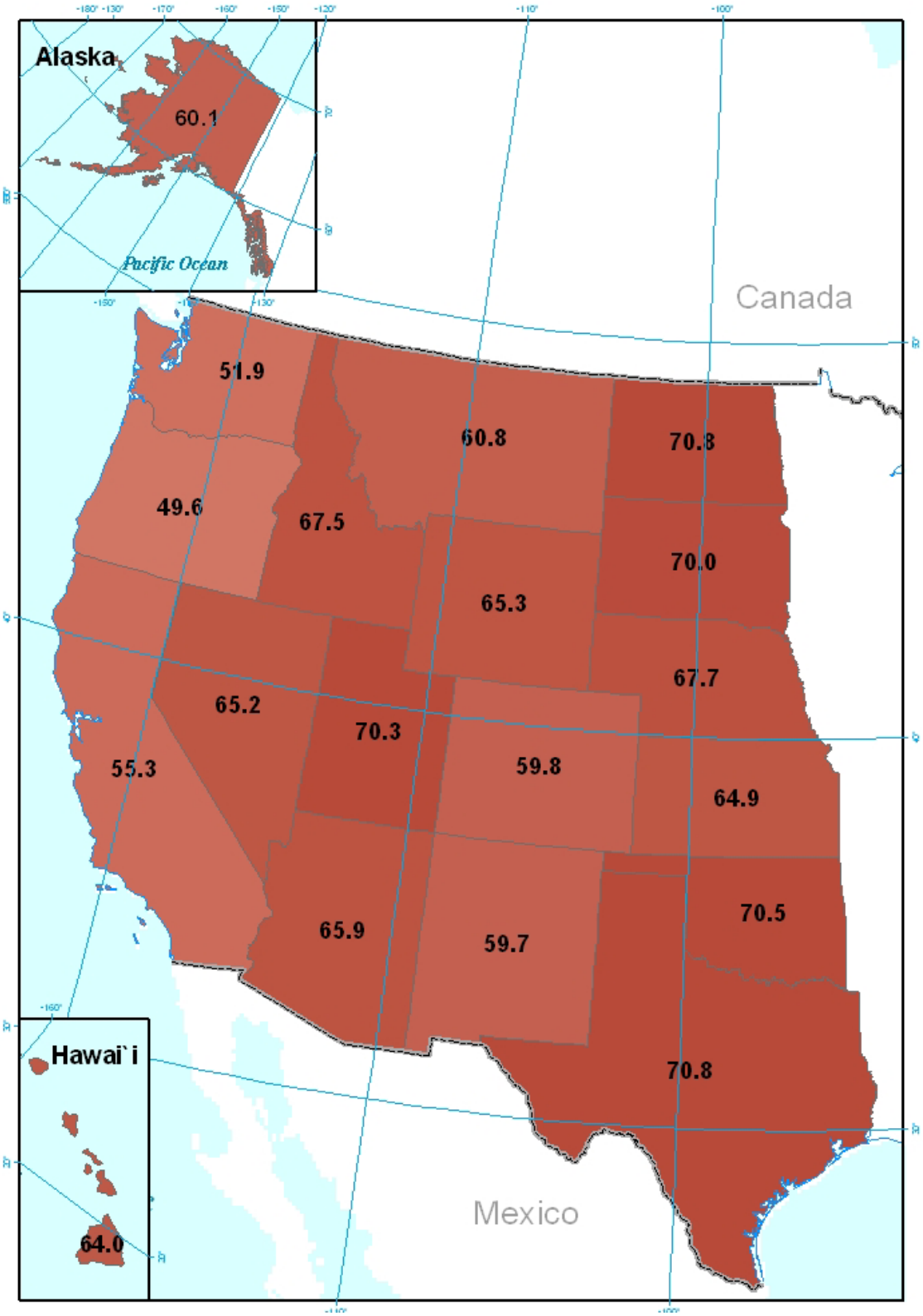


Figure B-4. Percent of Post-Materialists by state.

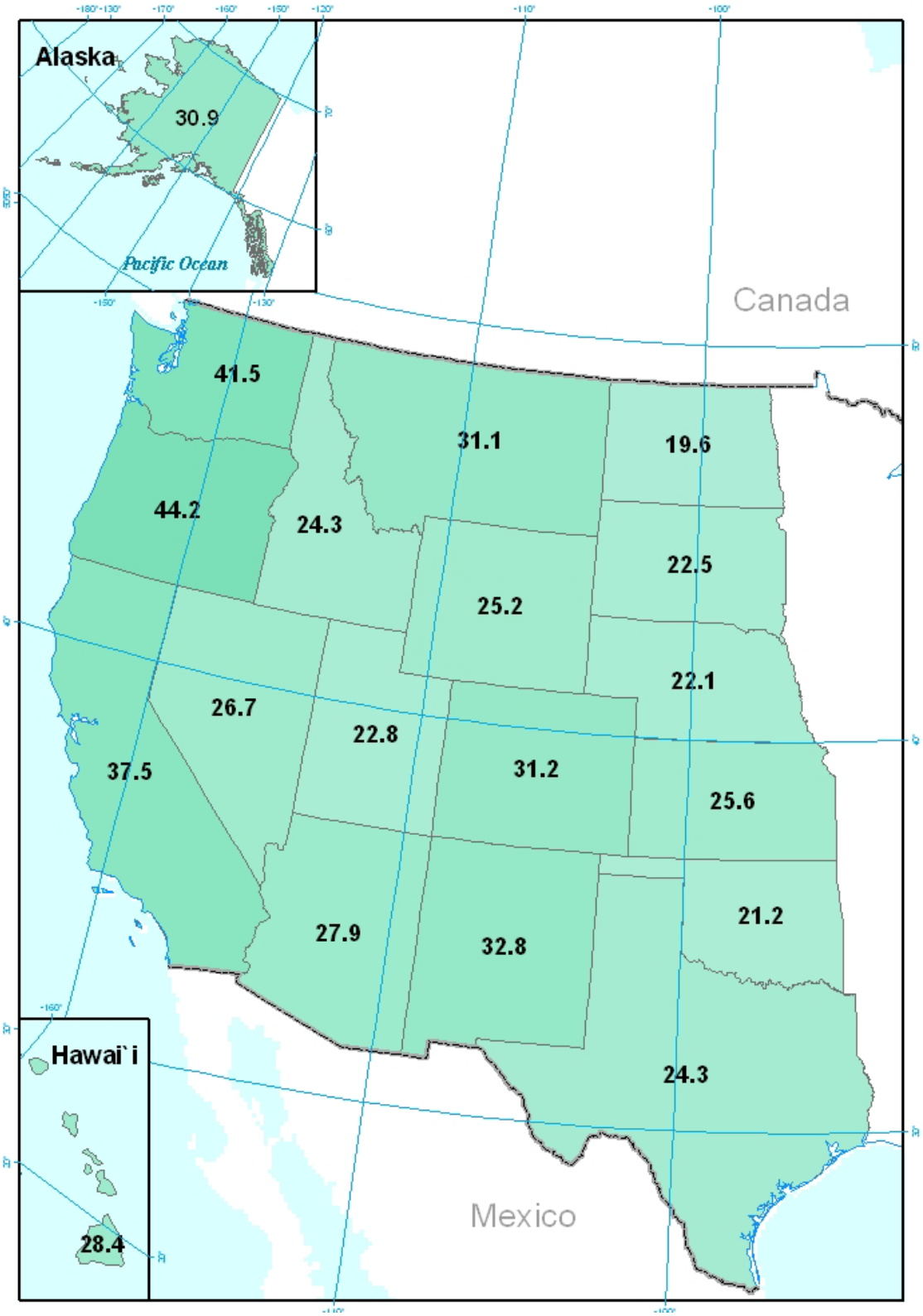
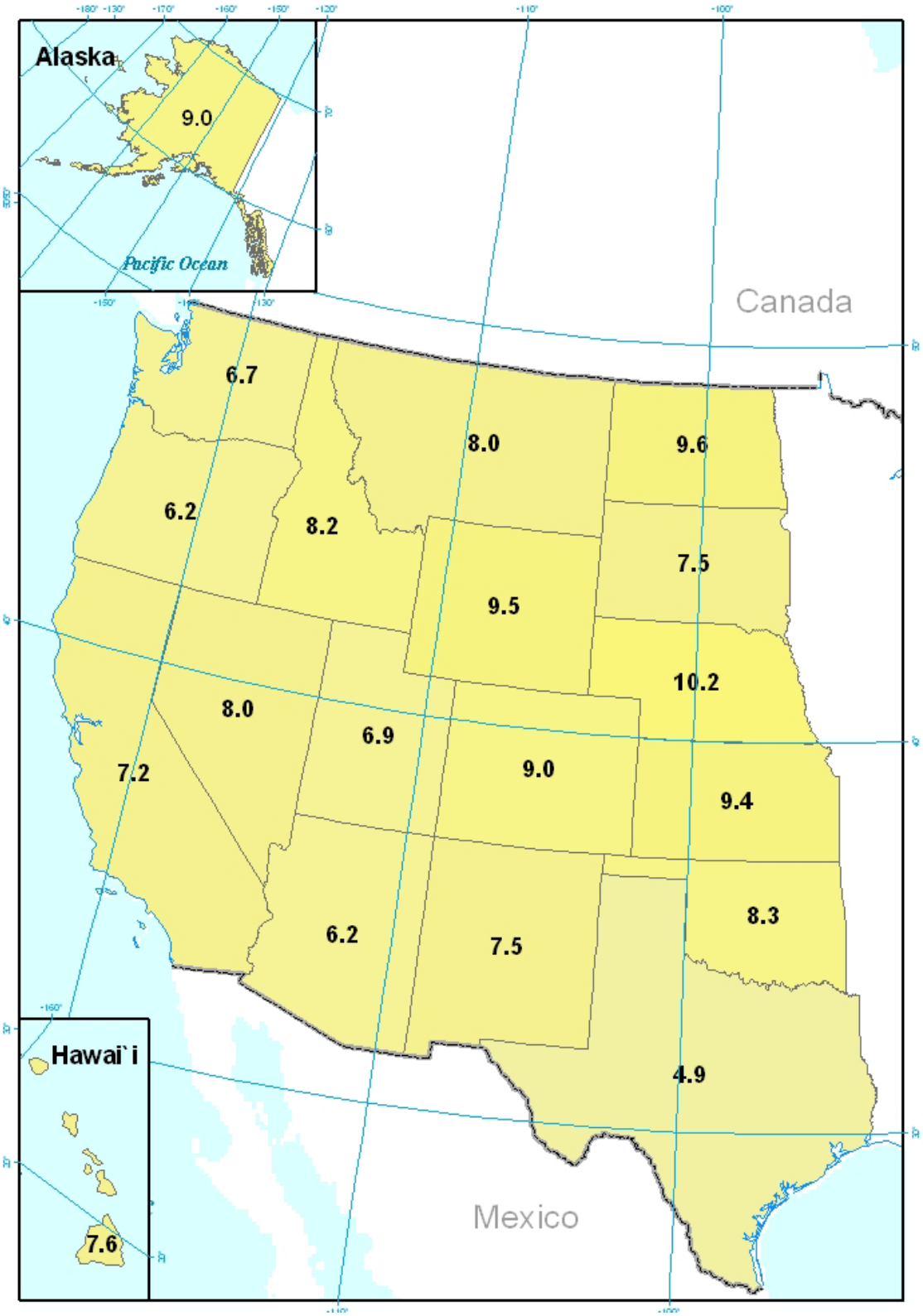


Figure B-5. Percent of those with Mixed Materialist/Post-Materialist values by state.



C. Environmentalism

The following three items, using a 1 to 7 disagree/agree scale, were included on the survey to measure environmentalism:

1. The natural environment should be protected for its own sake rather than simply to meet our needs.

2. We should strive for a society that emphasizes environmental protection over economic growth.

3. Protecting the natural environment should be this country's top priority.

Individuals were classified as "Environmentalists" if they scored high (i.e., above 4.50) on a mean composite containing the three variables (Cronbach's alpha = .75).

D. Trust in Government

Trust in governmental institutions was measured using three items, each of which had the following response scale: 1 = "almost never," 2 = "only some of the time," 3 = "most of the time," and 4 = "almost always." Each item focused on a different form, or level, of government – i.e., federal government, state government, and state fish and wildlife agency. For purposes of many of the analyses reported in this document, respondents who selected either a 3 or a 4 on the response scale were classified as those expressing trust in government.

Information about measurement of other variables discussed in this report can be obtained through examination of the survey instrument (Appendix G) or through descriptions contained in other sections.

Use of Maps to Display Project Results

Many of the results documented in this report are presented using maps created in ESRI© ArcMap™ 9.0. Each map shows the 19 western states that participated in the current study, with Alaska and Hawai`i in inset boxes.

Unless otherwise noted, the maps display varying shades of a particular color such that states with the lowest values (e.g., percents) for the survey item or variable being presented are assigned lighter shades than states with higher values for that item/variable. Within a given set of items the color shades are consistent across maps. For example, a dark purple on the public involvement philosophy maps that report results for six survey items (see Section IV) would designate the same high level of agreement on all six maps. The number in black on the state designates the state's value for the item or variable on which results are being reported.

An example of the map design, displaying state names in place of numbers to serve as a guide for interpreting the maps throughout the report, is shown in Figure B-6.

Figure B-6. Example template for map used to display results documented in this report.

Reporting of Effect Size Information

For many of the relationships among variables documented in this report, we provide a measure of effect size. Effect size is an indication of how strong the association is between variables (Cohen, 1988; Rosenthal, 1994). When analysis shows that a given relationship is statistically significant (e.g., $p < .05$), it tells us that it is likely that there is an association between two variables. However, it does not describe the *strength* of that association. In addition, certain statistical procedures are sensitive to sample size such that a large number of cases like that obtained in the current study may be linked to a higher likelihood of finding statistical significance even if the association between variables is quite weak. A determination of effect size is a way of addressing these concerns.

Several different types of effect size measures have been reported in the literature. Measures are selected on the basis of the nature of the variables in question and, more specifically, how they are measured and used in analysis.

Below is a list of the effect size measures selected for use in this report, along with criteria outlined in the literature for how they should be interpreted:

1. *Cramer's V* – used when both the independent and the dependent variable are categorical in nature. As an example, we would use Cramer's V to examine the strength of association between gender (2 categories: Male and Female) and our measure of wildlife value orientation type (4 categories: Utilitarian, Pluralist, Mutualist, Distanced). The following criteria are used in interpreting Cramer's V: .00 to under .10 – "negligible association," .10 to under .20 – "weak association," .20 to under .40 – "moderate association," .40 to under .60 – "relatively strong association," .60 to under .80 – "strong association," and .80 to 1.00 – "very strong association" (Rea & Parker, 1992).

2. *Pearson's r* – used when both the independent and the dependent variable are interval-level. As an example, we would use *r* in examining the association between the percent of people above a certain income category and the percent of people classified as Utilitarians in a state. Criteria for interpreting *r* are as follows: .10 – "small effect," .30 – "medium effect," and .50 – "large effect" (Cohen, 1988). Vaske, Gliner, and Morgan (2002) have also referred to these criteria using the labels, "minimal," "typical," and "substantial" to define the strength of relationships.

3. *Eta* – used when the independent variable is categorical in nature and the dependent variable is interval-level. As an example, we would use eta to examine the relationship between gender and environmentalism (defined by scoring on a mean composite of three survey items measured using a 1 to 7 disagree/agree scale). Criteria for interpreting eta, which is classified in the "r family" of effect size measures, are as follows: .10 – "small effect", .234 – "medium effect", and .371 – "large effect" (Cohen, 1988)

<u>References</u>

Arbuckle, J. L. (2003). *Amos user's guide*. Chicago, IL: Smallwaters Corporation.

Borgatti, S. P. (1997). *Multidimensional scaling*. Retrieved June 30, 2005, from http://www.analytictech.com/borgatti/mds.htm

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*, 2nd Edition. Hillsdale, NJ: Lawrence Erlbaum Associates.

Dillman, D. A. (2000). *Mail and internet surveys: The Tailored Design Method*, 2nd Edition. New York, NY: John Wiley & Sons.

Fulton, D. C., Manfredo, M. J., & Lipscomb, J. (1996). Wildlife value orientations: A conceptual and measurement approach. *Human Dimensions of Wildlife, 1*(2), 24-47.

Inglehart, R. (1997). *Modernization and postmodernization*. Princeton, NJ: Princeton University Press.

Kruskal, J. B., & Wish, M. (1977). *Multidimensional scaling*. Beveraly Hills, CA: Sage Publications.

Morgan, G. A., Gliner, J. A., & Harmon, R. (2001). Measurement validity. *American Academy of Child Adolescent Psychiatry, 40*(6), 729-731.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York, NY: McGraw Hill.

Rea, L. M., & Parker, R. A. (1992). *Designing and conducting survey research*. San Francisco, CA: Jossey-Bass.

Rosenthal, R. (1994). Parametric measures of effect size. In H. Cooper & L. Hedges (Eds.), *The handbook of research synthesis* (pp. 231-244). New York: Russell Sage Foundation.

SPSS, Inc. (2004). *SPSS Base 13.0 for Windows User's Guide*. Chicago, IL: SPSS, Inc.

Teel, T. L., Bright, A. D., & Manfredo, M. J. (2003). Regional results from the pilot phase of the research project entitled *"Wildlife Values in the West."* (Project Rep. No. 55). Project Report for the Western Association of Fish and Wildlife Agencies. Fort Collins, CO: Colorado State University, Human Dimensions in Natural Resources Unit.

U.S. Census Bureau. (2002). *2000 Census of Population and Housing.* Washington, DC: U.S. Census Bureau.

Vaske, J. J., Gliner, J. A., & Morgan, G. A. (2002). Communicating judgments about practical significance: Effect size, confidence intervals and odds ratios. *Human Dimensions of Wildlife*, *7*(4), 287-300.

Young, F. W. (1985). Multidimensional scaling. In Kotz, S. & Johnson, N. (Eds.), *Encyclopedia of Statistical Sciences, Volume 5*. John Wiley & Sons, Inc.

APPENDIX C. MAIL SURVEY RESPONSE RATES

This appendix provides detailed information about mail survey response rates.

Table C-1. Response rates to the mail survey by state.

State	Number of surveys mailed	Non-deliverables	Non-respondents	Completed surveys	Response rate (%)[1]
Alaska	3000	493	1959	548	22
Arizona	3001	346	2158	497	19
California	5009	798	3657	554	13
Colorado	3001	320	2040	641	24
Hawai`i	5001	768	3599	634	15
Idaho	3000	221	1951	828	30
Kansas	3001	250	2216	535	19
Montana	3000	241	1858	901	33
Nebraska	3000	190	2136	674	24
Nevada	5002	795	3574	633	15
New Mexico	5002	673	3470	859	20
North Dakota	3000	203	2082	715	26
Oklahoma	5002	534	3714	754	17
Oregon	3000	326	2057	617	23
South Dakota	3000	233	2016	751	27
Texas	5013	771	3695	547	13
Utah	3000	269	2123	608	22
Washington	3000	343	2108	549	21
Wyoming	2999	289	1882	828	31

[1]Response rate calculated using the following formula:
R = (# of completed surveys) / (# of surveys mailed - # of surveys returned by Postal Service as nondeliverable).
This calculation is sometimes referred to in the literature as the "adjusted response rate" as it is based upon removal of nonresponse due to people that are unable to be contacted (Connelly, Brown, & Decker, 2003).

A total of 12,673 individuals responded to the mail survey. Over 400 completed surveys were returned for each participating state. Response rates to the mail survey ranged across states from 13% in California to 33% in Montana.

References

Connelly, N. A., Brown, T. L., & Decker, D. J. (2003). Factors affecting response rates to natural resource-focused mail surveys: Empirical evidence of declining rates over time. *Society and Natural Resources, 16*, 541-549.

APPENDIX D. REPRESENTATIVENESS OF PROJECT DATA
PART 1: THE ISSUE OF SURVEY NONRESPONSE

This appendix provides information about the extent to which project data and findings documented in this report are representative of populations of interest. We began our examination of representativeness with comparisons between respondents and nonrespondents allowed by the nonresponse check telephone survey. Conclusions reached from these comparisons led to a decision to weight our data on certain key variables and to also acknowledge certain study limitations. Appendix F elaborates on procedures used to examine representativeness of project data – specifically in the context of establishing convergent validity for project findings.

Comparisons between Respondents and Nonrespondents

Research suggests that large percentages of nonrespondents to a survey are not necessarily indicative of greater nonresponse bias (Tourangeau, 2004). Survey nonresponse is only a problem if it limits the extent to which the study sample is representative of populations of interest – i.e., if the respondent sample does not adequately represent nonrespondents. What becomes important is not the issue of whether or not such bias exists in an absolute sense, but rather the *degree* to which it may affect the generalizability of study findings.

A critical question in this context is whether or not respondents and nonrespondents differ on key variables of interest to the study and, if so, what the magnitude of the difference is. To address this question, we conducted analyses that compared respondents (from the mail survey) to nonrespondents (surveyed via telephone nonresponse check) on key variables of interest to the study. Two things are typically done if differences are noted in these comparisons:

1. Data are weighted to correct for differences and thereby allow for better representation on specific variables.

2. Study limitations are cited.

Nonresponse Check Telephone Survey Details

In total, 7600 individuals participated in the telephone survey. Nearly 400 people in each state who did not respond to the mail survey completed the phone survey. Response rates ranged from 59% in Texas to 93% in Alaska and New Mexico (Table D-1).

Table D-1. Response rates to the nonresponse check telephone survey by state.

State	Completed surveys	Adjusted number of completed surveys[1]	Upperbound response rate (%)[2]
Alaska	400	393	93
Arizona	400	390	83
California	400	384	61
Colorado	400	390	74
Hawai`i	400	399	64
Idaho	400	381	82
Kansas	400	392	69
Montana	400	386	81
Nebraska	400	385	87
Nevada	400	394	78
New Mexico	400	362	93
North Dakota	400	397	88
Oklahoma	400	388	82
Oregon	400	385	65
South Dakota	400	394	89
Texas	400	391	59
Utah	400	396	87
Washington	400	394	69
Wyoming	400	387	92

[1]Number of completed surveys remaining after removing individuals who also responded to the mail survey.
[2]The upperbound response rate is also sometimes referred to in the literature as the "cooperation rate" for telephone surveys (American Association for Public Opinion Research, 2004). It refers to the proportion of all individuals interviewed of all "eligible units" contacted and is calculated using the following formula:
Response Rate = C / (C + R), where C = number of completed surveys, and R = number of actual refusals.

Differences between Respondents and Nonrespondents

Based on results from the pilot phase of Wildlife Values in the West (see Teel, Bright, & Manfredo, 2003), we expected to find certain differences between respondents and nonrespondents in the current study.

Specifically, we expected and found differences on the following variables in the current study:

1. Age

Younger age groups were found to be underrepresented and older age groups were found to be overrepresented in the pilot phase of Wildlife Values in the West (Teel et al., 2003). Given these

findings, we chose to adjust our sampling strategy in the current study to attempt to achieve better representation on age. Specifically, as described in Appendix B, samples of residents in each state purchased from Survey Sampling, Inc. were stratified on the basis of age; we oversampled in the youngest age category (18-34) and undersampled in the oldest age group (55+).

While the sampling scheme contributed to an improvement in actual numbers among younger age groups relative to pilot phase findings, we still found discrepancies between respondents and nonrespondents on distribution across age categories (Table D-2). Specifically, we found that respondents tended toward lower representation in the youngest age category (18-34) and higher representation in the 55 and older age group in these comparisons.

2. Participation in Wildlife-Related Recreation

Overrepresentation of people who participate in wildlife-related recreation occurred in the pilot phase (Teel et al., 2003). Differences between respondents and nonrespondents on participation were noted in the current study in the direction we expected based on these pilot phase findings (Table D-3). Specifically, nonrespondent samples in most states had higher percentages of "nonparticipants" with respect to involvement in hunting or fishing in the past year.

3. Gender

Pilot phase data displayed greater representation of males in respondent samples across participating states. The current study also reported differences with respect to gender representation. Between 56% and 65% of respondents across states were male (Table D-4). Percentages in this gender category were lower for nonrespondents, ranging from 42-50% across states.

<u>Additional Comparisons between Respondents and Nonrespondents</u>

Comparisons were made between respondents and nonrespondents on two additional variables – wildlife value orientations and interest in wildlife. Results of these comparisons, reported below, revealed only marginal differences.

Wildlife Value Orientations

An important question in the context of this study is whether we find differences between respondents and nonrespondents on the basis of their value orientations toward wildlife. We examined this question using items designed to measure basic beliefs about wildlife and wildlife management included on both the mail and telephone surveys. Results revealed only slight differences between respondents and nonrespondents. Below is a brief description of our methods for this comparison.

We conducted an analysis of variance to explore differences in overall mean levels of response on the basic belief items. The analysis also examined the extent to which respondents and nonrespondents differ in value orientations across categories of age and participation.

Table D-2. Percent of respondents and nonrespondents in selected age categories by state.

State	18-34 years old		35-54 years old		55+ years old	
	Respondents	Nonrespondents	Respondents	Nonrespondents	Respondents	Nonrespondents
Alaska	20	35	51	48	29	17
Arizona	16	27	38	41	46	32
California	16	28	39	39	45	33
Colorado	21	36	46	45	33	19
Hawai`i	12	28	41	44	47	28
Idaho	22	38	41	41	37	21
Kansas	21	31	42	44	37	25
Montana	18	26	41	42	41	32
Nebraska	21	30	39	40	40	30
Nevada	14	30	42	36	44	34
New Mexico	26	16	39	43	45	41
North Dakota	24	35	44	41	32	24
Oklahoma	20	36	40	34	40	30
Oregon	18	35	38	41	44	24
South Dakota	21	32	39	36	40	32
Texas	21	30	43	41	36	29
Utah	36	46	38	38	26	16
Washington	18	31	40	41	42	28
Wyoming	17	31	42	46	41	23

Table D-3. Percent of respondents and nonrespondents in selected participation categories, defined by involvement in wildlife-related recreation activities in the past year, by state.

State	Fish only		Hunt only		Fish and hunt		Non-participant	
	Respondents	Non-respondents	Respondents	Non-respondents	Respondents	Non-respondents	Respondents	Non-respondents
Alaska	36	38	2	3	36	24	27	36
Arizona	21	16	4	3	10	10	65	72
California	20	16	1	1	9	5	70	79
Colorado	25	22	3	2	14	11	58	66
Hawai`i	24	29	1	1	5	5	70	65
Idaho	26	25	4	5	31	24	40	46
Kansas	21	22	2	3	22	13	55	62
Montana	22	19	6	8	31	25	42	49
Nebraska	19	21	5	5	23	15	53	59
Nevada	21	17	3	1	9	8	67	74
New Mexico	20	20	4	4	13	10	64	67
North Dakota	17	20	8	6	33	27	42	47
Oklahoma	25	24	4	3	21	18	51	56
Oregon	24	22	4	3	22	13	50	62
South Dakota	15	19	8	5	35	19	42	57
Texas	20	20	4	4	18	7	58	68
Utah	25	23	4	3	20	14	52	61
Washington	27	26	2	2	14	6	57	66
Wyoming	22	30	6	4	31	24	42	42

Table D-4. Percent of respondents and nonrespondents in gender categories by state.

State	Male		Female	
	Respondents	Nonrespondents	Respondents	Nonrespondents
Alaska	62	49	38	51
Arizona	59	47	41	53
California	62	48	38	52
Colorado	59	48	41	52
Hawai`i	58	46	42	54
Idaho	65	47	35	53
Kansas	56	48	44	52
Montana	62	50	38	50
Nebraska	64	50	36	50
Nevada	61	45	39	55
New Mexico	58	43	42	57
North Dakota	60	44	40	56
Oklahoma	57	43	43	57
Oregon	60	45	40	55
South Dakota	63	46	37	54
Texas	61	42	39	58
Utah	63	43	37	57
Washington	61	42	39	58
Wyoming	62	47	38	53

A mean composite of the following items, which were measured on a response scale ranging from 1 = "strongly disagree" to 7 = "strongly agree," served as the dependent variable in our analysis (Inter-item correlation = .27, $p < .001$):

1. People who want to hunt should be provided the opportunity to do so.
2. Animals should have rights similar to the rights of humans (reverse coded).

As described elsewhere in this report (see Section II), these items were included among a larger set of survey items used to identify wildlife value orientations. A higher score on the composite index in this context suggests a greater tendency to hold a utilitarian wildlife value orientation.

Comparisons between respondents and nonrespondents on these items yielded a small difference in mean scoring of 0.32 on the 1 to 7 response scale ($F = 83.34$, 1 df, $p < .001$). Nonrespondents (mean = 5.14) were slightly less likely than respondents (mean = 5.46), to express agreement on the composite index. This indicates a slightly greater tendency among respondents to hold a utilitarian orientation toward wildlife. It is important to note that the effect size for this relationship is quite small (partial $eta^2 < .01$), indicating that differences between respondents and nonrespondents on basic beliefs about wildlife are much less significant than discrepancies noted between these two groups on such variables as age and participation.

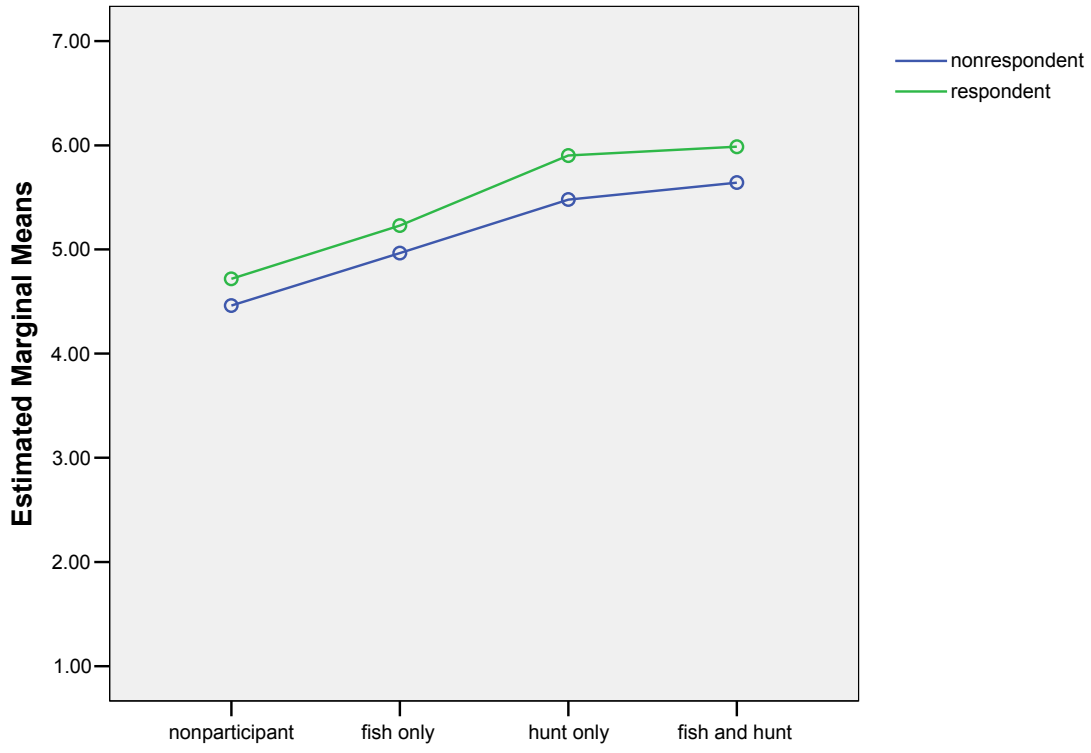
Figure D-1 provides a break-down of average response for respondents and nonrespondents on the composite index across participation and age categories. There was not a significant interaction in the analysis between the variable representing response/nonresponse and each of these variables (participation: $F = 1.17$, 3 df, $p = .32$; age: $F = .26$, 2 df, $p = .77$). That is, differences between respondents and nonrespondents did not vary (rather, they persisted) across categories of participation and age.

Interest in Wildlife

A final comparison between respondents and nonrespondents provided insight into factors that may affect nonresponse to surveys such as the one employed in this study. The comparison was made on the basis of the following item: "I am really not that interested in fish and wildlife." An analysis of variance revealed that nonrespondents (mean = 2.42) were slightly less likely than respondents (mean = 1.90) to disagree with this item ($F = 150.86$, 1 df, $p <.001$). The partial eta^2 (.01) indicated a small effect size for this relationship. Figure D-2 provides a graphical display of the pattern of response to this item for respondents and nonrespondents across participation and age groups.

While differences were quite small, results seem to be consistent with literature on nonresponse which highlights the importance of saliency of topic for participation in mail surveys. Connelly, Brown, and Decker (2003), in a recent analysis of factors affecting nonresponse to natural resource-related mail surveys over a 30-year period, indicate that saliency of the study topic to the surveyed population can play a critical role in the determination of response rates. They suggest that a highly salient survey administered to specific audiences (e.g., a survey of hunters containing questions about hunting-related issues) can elicit a 25% higher response rate than a general public survey when all other variables are held constant. The importance of saliency as a determinant of response rates was also identified early on by Heberlein and Baumgartner (1978).

Figure D-1. Estimated marginal means for respondents and nonrespondents on the mean composite approximating wildlife value orientations across categories of participation in wildlife-related recreation and age.



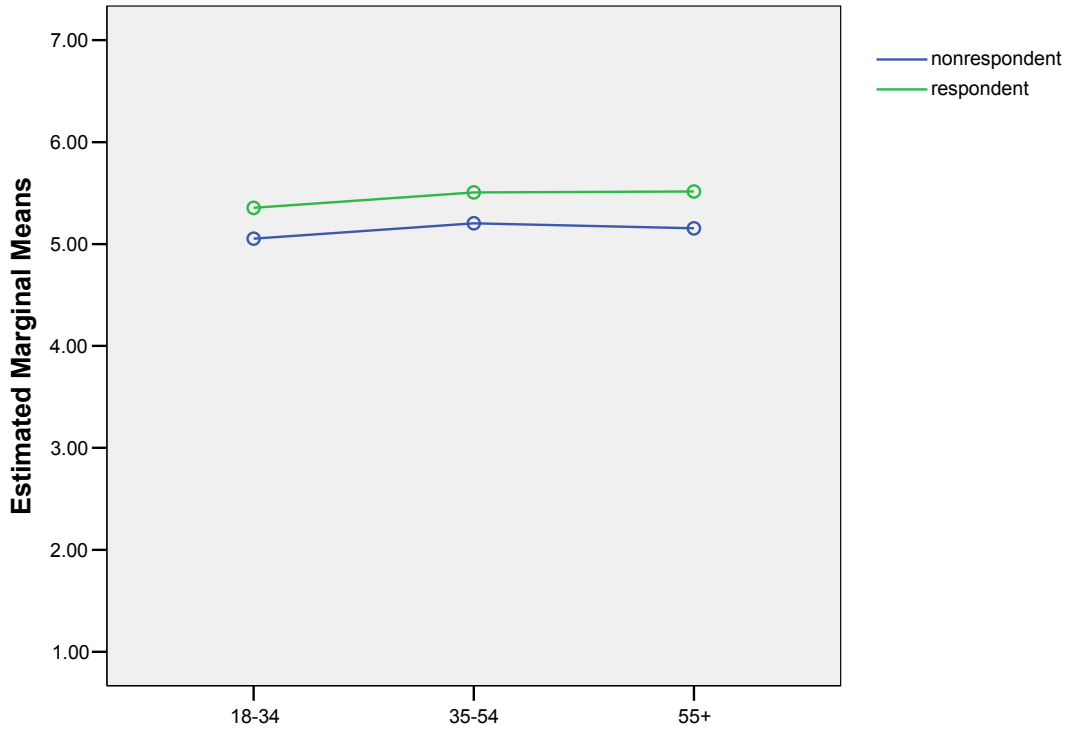
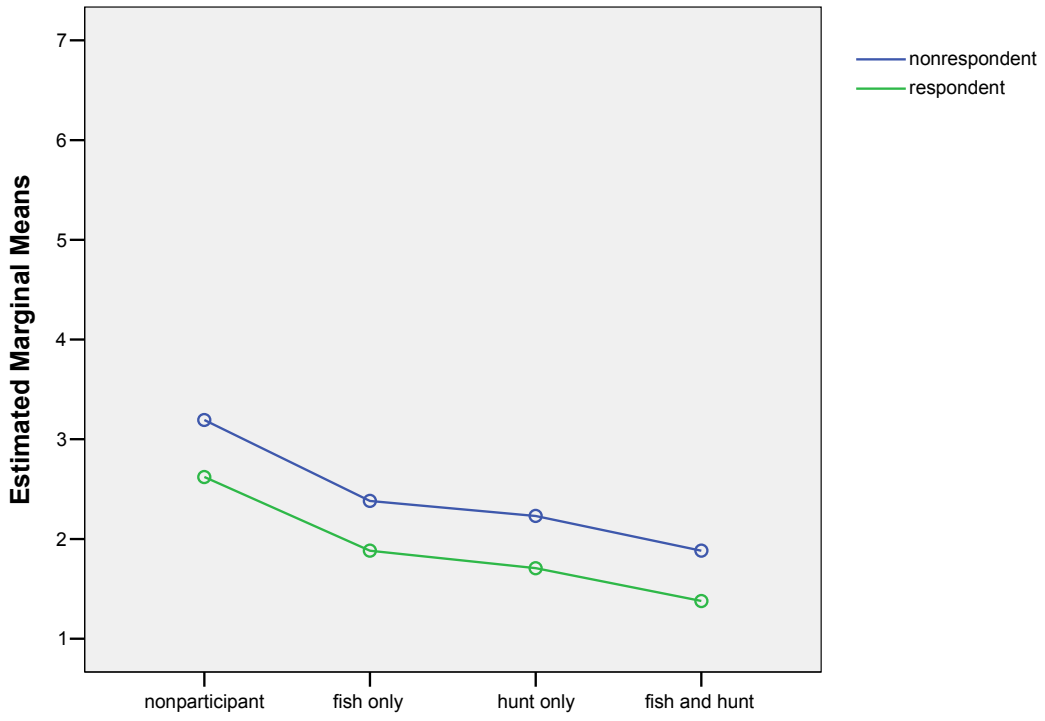
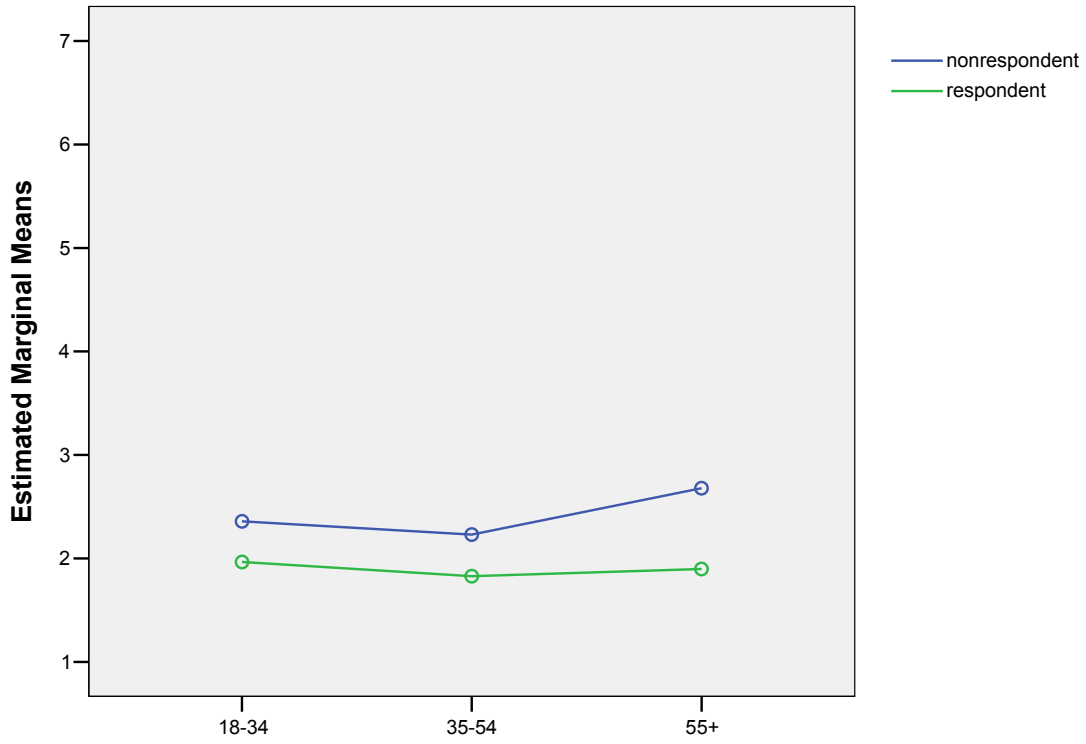


Figure D-2. Estimated marginal means for respondents and nonrespondents on the item "I am really not that interested in fish and wildlife" across categories of participation in wildlife-related recreation and age.





Addressing Differences through Weighting of Project Data

Following comparisons outlined above, the decision was made to apply weighting procedures to project data to address respondent-nonrespondent differences in certain areas (see Appendix E for a full description of these procedures). Two assumptions were made in this context:

Assumption 1: Weighting by certain variables ensures that respondents adequately represent nonrespondents on these variables. Specifically, within categories of weighting variables, respondents are an adequate representation of people who did not respond.

Assumption 2: Weighting by certain variables can correct for respondent-nonrespondent differences that may exist on other variables.

The variables we selected for use in weighting were based on an identification of key differences between respondents and nonrespondents in relation to the focus of the study. As noted previously, we found *only slight differences* on wildlife value orientations – a critical variable to this project. However, we found *substantial differences* on certain sociodemographic and lifestyle characteristics that relate to wildlife value orientations and other key study concepts. On the basis of these findings, we decided to weight by age and participation in wildlife-related recreation activities. We then conducted follow-up analyses to examine the extent to which weighting affected other variables in the data set.

Effect of Weighting on Gender

By weighting on certain variables, we assumed that we would be able to correct for differences between respondents and nonrespondents on other variables of interest to the study. Indeed, this assumption was true for gender. As reported in Appendix E (Table E-6), weighting by age and participation ensured more accurate representation of gender categories in respondent data.

Examination of Additional Variables following Weighting

As mentioned at the outset in this appendix, two things can be done when differences between respondents and nonrespondents are noted. In addition to weighting, which we applied to correct for age and participation differences, specific study limitations can be acknowledged.

Following weighting, we conducted analyses to examine the extent to which project data were representative on additional variables included on the survey. Results of these analyses highlight specific areas in which we declare limitations on the representativeness of our data. Each of these areas is described below.

Race and Ethnicity

Following weighting, we examined the representation of specific racial and ethnic groups in our data. Table D-5 provides information about representation of race and ethnicity categories as compared to estimates obtained from the U.S. Census (U.S. Census Bureau, 2002). As the table

indicates, project data both before and after weighting tend to underrepresent certain non-White population subgroups defined by these categories. For example, project data reflect a lower representation of Spanish/Hispanic/Latino individuals relative to the populations in most states.

Additional information relative to race and ethnicity was provided by the nonresponse check telephone survey. These variables were not directly measured as part of the phone survey – thus precluding our ability to compare respondents and nonrespondents on these measures. However, from this effort, we were able to identify certain groups of people who were unable to participate in either the phone survey or the mail survey due to a language barrier.

Table D-6 contains a detailed account of the number and percentage of people unable to be reached in the telephone survey. One of the most frequent reasons for ineligibility was language barrier, which overall accounted for 18% of ineligibles. In the following states over 15% of individuals unable to be contacted to complete the telephone survey displayed evidence of a language barrier: Arizona, Colorado, Hawai`i, New Mexico, Nevada, Oregon, Texas, and Washington. California, the state with the lowest response rate for the mail survey and the second lowest response rate for the phone survey, demonstrated the highest proportion of ineligibles explained by an inability to participate due to language.

Following a realization that data were not adequately representing certain racial and ethnic groups (e.g., non-English-speaking), the decision was made to declare this as a study limitation rather than weight our data by additional variables. Our decision was based on low respondent numbers corresponding to the underrepresented groups. We felt that the lack of response associated with certain categories of race and ethnicity limited our confidence in data obtained for these groups. Therefore, we felt that weighting on the basis of this information was prohibitive.

Income and Education

Other variables examined following weighting were income and education. Comparisons of respondent data with U.S. Census information (U.S. Census Bureau, 2002) revealed that the former overrepresented higher income and education categories. Following the identification of these differences, consideration was given to whether or not data should be weighted to correct for them. To assist with this decision, we examined the relationship between income and education and key study concepts – i.e., wildlife value orientations and responses to regional issues and management actions. Analyses showed the lack of a meaningful difference on key variables across categories of income and education.

Based on the latter findings and also given a possible connection between the underrepresentation of low education/income categories and the underrepresentation of certain racial and ethnic groups in this study (see U.S. Census Bureau, 2002), we decided not to weight the data by education and income. Instead we acknowledge findings associated with representation on income and education to be a study limitation, but one that our analysis would indicate has a minimal effect on findings related to wildlife value orientations and wildlife-related issues reported in this study.

Table D-5. Respondent race and Hispanic ethnicity by state (unweighted and weighted) represented by percentages compared to estimates obtained from census-based sources.[1]

State	Spanish, Hispanic, or Latino			White, not Hispanic			Black, not Hispanic[5]			Native American or Native Alaskan			Asian			Native Hawaiian or other Pacific Islander			Other		
	U[2]	W[3]	C[4]	U	W	C	U	W	C	U	W	C	U	W	C	U	W	C	U	W	C
Alaska	1.5	2.7	4.1	85.5	83.5	67.6	0.6	0.6	3.5	9.5	10.3	15.6	1.4	1.8	4.0	0.2	0.2	0.5	1.6	1.0	1.6
Arizona	6.2	9.1	25.3	90.7	88.2	63.8	0.9	0.4	3.1	1.3	0.9	5.0	1.3	0.9	1.8	0.2	0.6	0.1	0.9	1.9	11.6
California	9.8	13.1	32.4	80.5	73.8	46.7	2.1	2.2	6.7	0.9	1.3	1.0	6.4	9.4	10.9	0.9	1.1	0.3	0.6	0.6	16.8
Colorado	3.9	3.3	17.1	94.3	94.9	74.5	0.5	0.7	3.8	0.3	0.3	1.0	0.5	0.7	2.2	0.2	0.0	0.1	0.2	0.0	7.2
Hawai`i	3.6	3.8	7.2	39.7	42.9	22.9	0.9	1.5	1.8	0.2	0.2	0.3	46.6	43.8	41.6	9.7	8.9	9.4	0.9	0.7	1.3
Idaho	1.3	0.9	7.9	96.9	97.7	88.0	0.1	0.1	0.4	1.0	0.9	1.4	0.3	0.1	0.9	0.0	0.0	0.1	0.5	0.5	4.2
Kansas	1.4	1.4	7.0	95.0	94.5	83.1	1.0	0.8	5.7	0.4	0.4	0.9	1.8	2.6	1.7	0.2	0.0	0.0	0.2	0.2	3.4
Montana	1.2	1.6	2.0	97.5	97.0	89.5	0.0	0.0	0.3	0.9	1.3	6.2	0.5	0.4	0.5	0.0	0.0	0.1	0.2	0.1	0.6
Nebraska	1.3	1.4	5.5	96.7	95.9	87.3	1.3	1.5	4.0	0.3	0.3	0.9	0.2	0.3	1.3	0.0	0.0	0.0	0.5	0.7	2.8
Nevada	4.0	5.5	19.7	88.9	86.8	65.2	2.1	2.1	6.8	0.9	1.4	1.3	2.6	2.6	4.5	1.0	1.7	0.4	1.0	0.9	8.0
New Mexico	17.1	19.5	42.1	78.9	76.4	44.7	0.8	0.9	1.9	1.9	1.9	9.5	0.3	0.3	1.1	0.1	0.0	0.1	1.9	2.3	17.0
North Dakota	0.5	0.6	1.2	97.9	97.9	91.7	0.3	0.3	0.6	1.2	1.1	4.9	0.2	0.2	0.6	0.0	0.0	0.0	0.0	0.0	0.4
Oklahoma	1.6	2.0	5.2	88.3	87.0	74.1	3.2	3.4	7.6	5.9	5.8	7.9	1.1	1.7	1.4	0.0	0.0	0.1	0.2	0.2	2.4
Oregon	1.4	1.6	8.0	96.6	96.1	83.5	0.4	0.4	1.6	0.7	0.5	1.3	0.5	0.9	3.0	0.0	0.0	0.2	0.7	0.7	4.2
South Dakota	0.7	1.4	1.4	97.1	96.8	88.0	0.0	0.0	0.6	1.4	1.4	8.3	0.3	0.3	0.6	0.0	0.0	0.0	0.7	0.6	0.5
Texas	9.0	11.5	32.0	82.9	79.2	52.4	4.2	4.6	11.5	1.4	0.6	0.6	2.2	3.2	2.7	0.0	0.0	0.1	1.0	1.4	11.7
Utah	2.4	2.8	9.0	95.1	94.2	85.3	0.4	0.5	0.8	0.4	0.4	1.3	1.1	1.4	1.7	0.4	0.5	0.7	0.7	0.9	4.2
Washington	2.7	3.3	7.5	93.5	92.9	78.9	0.4	0.2	3.2	0.8	1.2	1.6	2.6	2.8	5.5	0.4	0.2	0.4	0.4	0.2	3.9
Wyoming	2.6	3.7	6.4	95.1	93.6	88.9	0.3	0.3	0.8	1.0	1.3	2.3	0.5	0.6	0.6	0.1	0.4	0.1	0.4	0.3	2.5

[1]Census information based on U.S. Census 2000 (U.S. Census Bureau, 2002) estimates. Table includes those of one race (as reported in the census). Less than 3% of the population in the U.S. is more than one race. Those who are Hispanic (an ethnicity) may be of one or more of the listed races.
[2]"U" designates percentages from unweighted data.
[3]"W" designates percentages from weighted data.
[4]"C" designates percentages from census data.
[5]For the census, percentages are for blacks of both Hispanic and non-Hispanic ethnicities.

Table D-6. Percent of individuals classified in specific categories of ineligibility for the nonresponse check telephone survey by state.

State	Disconnected phone		Business or government phone		Computer tone		Language barrier		Privacy block		No one 18+ years of age in household	
	n[1]	%[2]	n	%	n	%	n	%	n	%	n	%
Alaska	348	91	15	4	9	2	9	2	1	0	1	0
Arizona	259	63	10	2	37	9	98	25	7	2	0	0
California	626	53	52	4	65	6	440	37	0	0	3	0
Colorado	334	68	16	3	26	5	95	19	22	4	2	0
Hawai`i	586	70	17	2	47	6	186	22	2	0	5	1
Idaho	226	51	20	5	20	5	32	7	146	33	2	1
Kansas	348	78	10	2	29	7	54	12	7	2	1	0
Montana	292	84	16	5	7	2	29	8	5	1	0	0
Nebraska	281	87	7	2	13	4	18	6	5	2	0	0
Nevada	318	45	34	5	51	7	169	24	137	19	0	0
New Mexico	279	75	7	2	16	4	61	17	7	2	0	0
North Dakota	255	81	13	4	5	2	5	2	36	12	0	0
Oklahoma	582	82	24	3	32	5	67	10	1	0	0	0
Oregon	343	71	21	4	22	5	89	18	7	1	4	1
South Dakota	254	89	4	1	5	2	11	4	9	3	2	1
Texas	781	70	37	3	65	6	236	21	3	0	0	0
Utah	299	75	12	3	29	7	42	11	17	4	1	0
Washington	286	64	30	7	18	4	99	22	15	3	1	0
Wyoming	185	88	5	2	9	4	4	2	8	4	0	0

[1]n = number of individuals in the specified category.
[2]Percent of all ineligibles within the state, i.e., percent of all individuals unable to be reached by phone in the state.

Summary

Results from comparisons of respondents and nonrespondents to the mail survey revealed differences in several areas. Respondent samples tended toward overrepresentation of people who participate in wildlife-related recreation and underrepresentation of females and younger age groups. Only minor variations were found between respondents and nonrespondents on wildlife value orientations. A decision was made on the basis of these comparisons to weight project data by age and participation (see Appendix E for more detail on weighting) and to then explore how weighting procedures may have affected other variables.

Follow-up analyses revealed that weighting ensured more accurate representation of gender categories in respondent data. These analyses also revealed that data reported in the current study underrepresent certain racial and ethnic groups, as well as lower income and education classes. Recognizing this as a limitation, we conducted further checks on the extent to which study results are generalizable to populations of interest. Specifically, as reported in Appendix F, we examined the convergent validity of study findings.

References

American Association for Public Opinion Research. (2004). *Standard definitions: Final dispositions of case codes and outcome rates for surveys*, 3rd edition. Lenexa, KS: AAPOR.

Connelly, N. A., Brown, T. L., & Decker, D. J. (2003). Factors affecting response rates to natural resource-focused mail surveys: Empirical evidence of declining rates over time. *Society and Natural Resources, 16*, 541-549.

Heberlein, T. A., & Baumgartner, R. (1978). Factors affecting response rates to mailed questionnaires: A quantitative analysis of the published literature. *American Sociological Review, 43*(4), 447-462.

Teel, T. L., Bright, A. D., & Manfredo, M. J. (2003). *Regional results from the pilot phase of the research project entitled "Wildlife Values in the West."* (Project Rep. No. 55). Project Report for the Western Association of Fish and Wildlife Agencies. Fort Collins, CO: Colorado State University, Human Dimensions in Natural Resources Unit.

Tourangeau, R. (2004). Survey research and societal change. *Annual Review of Psychology, 55*, 775-801.

U.S. Census Bureau. (2002). *2000 Census of Population and Housing.* Washington, DC: U.S. Census Bureau.

APPENDIX E. DATA WEIGHTING PROCEDURES

Results reported in this document were obtained from weighted data, i.e., from data weighted to accurately reflect each state's population characteristics. Specifically, to ensure accurate representation, data were *weighted by state on the basis of age and participation in wildlife-related recreation*. When data in the report are displayed for the entire western region (i.e., all states combined), as opposed to reporting by state, an additional weight has been assigned to adjust for population sizes of participating states.

This appendix provides a detailed account of weighting procedures, including comparisons on key variables between respondents and existing population estimates from other known sources. Each of the following summary points is addressed in this section of the report:

1. While comparisons between respondents and nonrespondents proved useful in identifying areas where weighting would be necessary (see Appendix D), we determined that population estimates calculated using combined respondent-nonrespondent samples were not entirely representative of the public on key variables of interest. This determination was based on comparisons with existing population estimates obtained from census data, and it is consistent with literature on weighting (e.g., Elliot, 1991) which suggests that weighting only on the basis of a sample of nonrespondents compared to other possible techniques can result in reduced precision of population estimates.

2. Based on the above findings, we chose to conduct direct comparisons between respondent samples and census-based sources on the representation of certain subgroups. Final weighting procedures were applied in each state to adjust respondent samples for underrepresentation of younger age groups and overrepresentation of certain forms of wildlife-related recreation within each state.

3. Final weighting resulted in accurate representation of population subgroups defined by specific age and participation in wildlife-related recreation categories. Weighting by participation and age also corrected for differences in representation of gender categories noted in comparisons between respondent samples and census-based sources.

4. An additional weighting method was used to allow for reporting of results at the regional level (i.e., data from all 19 participating states combined). This procedure took into account actual population sizes of participating states.

Existing population estimates for age-related comparisons and weighting procedures described in this section were based on U.S. Census 2000 (U.S. Census Bureau, 2002) projections to the year 2003 that were formulated by Scan/US, Inc. and provided to Survey Sampling, Inc. Comparisons and adjustments for participation in wildlife-related recreation were made on the basis of estimates reported by the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of the Interior & U.S. Department of Commerce, 2001). U.S. Census 2000 (U.S. Census Bureau, 2002) information was used to determine population sizes of each participating state for purposes of weighting to report results at the regional level.

Tables E-1 and E-2 compare population estimates for age and participation categories, calculated using combined respondent-nonrespondent samples, to existing population estimates from

census-based sources. Comparisons revealed that in more than half of the participating states population estimates obtained from the former procedure underrepresented the youngest age category. Differences were more substantial for participation, highlighting an overrepresentation in combined respondent-nonrespondent samples of anglers as well as those who both hunt and fish. More detail on comparisons between respondents and nonrespondents can be found in Appendix D.

Tables E-3 and E-4 display comparisons between respondent samples and existing census-based sources on representation of specific age and participation categories. Weights were calculated in the context of these comparisons to adjust data for underrepresentation of younger age categories and a general trend toward overrepresentation of participants in wildlife-related recreation.

Table E-5 displays percentages of respondents distributed across selected participation categories following adjustments to data due to weighting by both age and participation. Percentages are compared with information obtained from census-based sources to illustrate that weighted data are representative of populations in each participating state with respect to specific participation subgroups. Comparisons revealed that weighted data are also representative of specific age groups. In fact, because weighting by age occurred *after* adjustments by participation were made, percentages of respondents in each age category (18-34, 35-54, 55+) obtained from weighted data are identical to those reported in census-based sources.

Table E-6 shows that weighting by age and participation also adjusted for differences in representation of gender categories that existed between respondent data and census-based sources. Respondent samples tended toward overrepresentation of males. Weighting procedures helped to correct for this phenomenon.

Table E-7 reports the respondent sample size for each participating state and shows how weights were calculated to allow for reporting of information at the regional level. Specifically, the table compares the number of respondents to the mail survey in each participating state and their proportion of the overall sample with actual state population size and corresponding percent of the regional population. Weights were applied to adjust for the discrepancy between proportions existing in project data and those reported by the U.S. Census 2000 (U.S. Census Bureau, 2002).

Table E-1. Respondent-nonrespondent population estimates for representation of age categories by state compared to estimates obtained from census-based sources.

State	18-34 years old		35-54 years old		55+ years old	
	Population estimate[1]	Census[2]	Population estimate	Census	Population estimate	Census
Alaska	32	33	49	45	20	22
Arizona	25	32	40	37	35	31
California	26	33	39	40	35	27
Colorado	32	32	45	42	22	26
Hawai`i	26	30	44	39	31	31
Idaho	33	33	41	38	26	29
Kansas	29	32	44	38	27	30
Montana	23	29	42	39	35	32
Nebraska	28	32	40	38	32	30
Nevada	28	31	37	39	36	30
New Mexico	18	31	42	39	42	30
North Dakota	32	32	42	37	26	31
Oklahoma	33	32	35	37	32	31
Oregon	31	30	40	39	29	31
South Dakota	29	31	37	38	34	31
Texas	29	35	41	39	30	26
Utah	44	42	38	35	18	23
Washington	28	31	41	41	31	28
Wyoming	27	31	45	39	29	30

[1]Population estimates were calculated using percentages carried out to two decimal places. Percentages appearing in this table have been rounded to whole numbers for consistency in reporting and ease of interpretation. Population estimates were calculated from combined respondent-nonrespondent samples using the formula,
Population Estimate = (1-Mail Survey Response Rate)(Nonrespondent %) + (Mail Survey Response Rate)(Respondent %).
[2]Census information based on U.S. Census 2000 (U.S. Census Bureau, 2002) projections to the year 2003 that were formulated by Scan/US, Inc. and provided to Survey Sampling, Inc.

Table E-2. Respondent-nonrespondent population estimates for representation of wildlife-related recreation participation categories by state compared to estimates obtained from census-based sources.

State	Fish only		Hunt only		Fish and hunt		Non-Participant	
	Population estimate[1]	National Survey[2]	Population estimate	National Survey	Population estimate	National Survey	Population estimate	National Survey
Alaska	37	29	3	4	26	12	34	55
Arizona	16	8	3	1	10	2	70	89
California	17	9	1	1	5	1	78	90
Colorado	22	16	2	2	12	4	64	78
Hawai`i	28	11	1	1	5	2	66	86
Idaho	25	16	4	5	26	11	44	68
Kansas	22	14	3	3	15	7	61	76
Montana	20	15	7	8	27	16	46	61
Nebraska	21	14	5	3	17	7	57	76
Nevada	18	10	1	1	8	2	73	87
New Mexico	20	11	4	3	10	6	66	80
North Dakota	19	16	6	6	29	13	45	65
Oklahoma	24	19	3	2	18	8	55	71
Oregon	23	14	3	2	15	7	59	77
South Dakota	18	15	6	5	23	11	53	69
Texas	20	10	4	2	9	5	67	83
Utah	23	19	3	3	15	9	59	69
Washington	26	16	2	1	8	4	64	79
Wyoming	28	19	5	4	26	13	42	64

[1]Population estimates were calculated using percentages carried out to two decimal places. Percentages appearing in this table have been rounded to whole numbers for consistency in reporting and ease of interpretation. Population estimates were calculated from combined respondent-nonrespondent samples using the formula, Population Estimate = (1-Mail Survey Response Rate)(Nonrespondent %) + (Mail Survey Response Rate)(Respondent %).
[2]National Survey information based on estimates reported by the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of the Interior & U.S. Department of Commerce, 2001).

Table E-3. Percent of respondents in selected age categories by state compared to estimates obtained from census-based sources.

State	18-34 years old			35-54 years old			55+ years old		
	Respondents[1]	Census[2]	Weight[3]	Respondents	Census	Weight	Respondents	Census	Weight
Alaska	18	33	1.83	48	45	0.94	34	22	0.64
Arizona	15	32	2.21	38	37	0.98	48	31	0.65
California	16	33	2.02	38	40	1.06	46	27	0.59
Colorado	21	32	1.56	46	42	0.92	34	26	0.77
Hawai`i	11	30	2.73	39	39	1.01	51	31	0.61
Idaho	22	33	1.53	37	38	1.03	42	29	0.70
Kansas	20	32	1.62	39	38	0.99	42	30	0.72
Montana	17	29	1.75	39	39	0.99	44	32	0.72
Nebraska	19	32	1.65	36	38	1.05	45	30	0.67
Nevada	14	31	2.23	40	39	0.98	46	30	0.65
New Mexico	15	31	2.01	37	39	1.05	48	30	0.63
North Dakota	22	32	1.45	41	37	0.91	37	31	0.83
Oklahoma	18	32	1.78	39	37	0.95	43	31	0.72
Oregon	18	30	1.64	37	39	1.07	45	31	0.69
South Dakota	18	31	1.75	36	38	1.06	47	31	0.67
Texas	21	35	1.71	41	39	0.96	39	26	0.67
Utah	37	42	1.15	36	35	0.98	28	23	0.82
Washington	18	31	1.74	38	41	1.08	44	28	0.63
Wyoming	16	31	1.96	39	39	1.01	45	30	0.66

[1]Percent of respondents after weighting data by participation in wildlife-related recreation activities.
[2]Census information based on U.S. Census 2000 (U.S. Census Bureau, 2002) projections to the year 2003 that were formulated by Scan/US, Inc. and provided to Survey Sampling, Inc.
[3]Weights were calculated using the formula, (x)(Respondent %) = Population %, where x is the required weighting factor. Weights were determined using percentages carried out to two decimal places. Percentages appearing in this table have been rounded to whole numbers for consistency in reporting and ease of interpretation.

Table E-4. Percent of respondents in selected participation categories, defined by involvement in wildlife-related recreation activities in the past year, by state compared to estimates obtained from census-based sources.

	Fish only			Hunt only			Fish and hunt			Non-Participant		
State	R[1]	NS[2]	Weight[3]	R	NS	Weight	R	NS	Weight	R	NS	Weight
Alaska	36	29	0.81	2	4	2.00	36	12	0.34	27	55	2.08
Arizona	21	8	0.38	4	1	0.29	10	2	0.20	65	89	1.37
California	20	9	0.45	1	1	0.38	9	1	0.12	70	90	1.28
Colorado	25	16	0.63	3	2	0.63	14	4	0.29	58	78	1.35
Hawai`i	24	11	0.45	1	1	1.00	5	2	0.42	70	86	1.23
Idaho	26	16	0.62	4	5	1.19	31	11	0.36	40	68	1.72
Kansas	21	14	0.67	2	3	1.30	22	7	0.32	55	76	1.39
Montana	22	15	0.70	6	8	1.38	31	16	0.51	42	61	1.47
Nebraska	19	14	0.73	5	3	0.59	23	7	0.39	53	76	1.44
Nevada	21	10	0.48	3	1	0.30	9	2	0.31	67	87	1.31
New Mexico	20	11	0.56	4	3	0.79	13	6	0.47	64	80	1.25
North Dakota	17	16	0.93	8	6	0.78	33	13	0.22	42	65	1.55
Oklahoma	25	19	0.77	4	2	0.56	21	8	0.39	51	71	1.39
Oregon	24	14	0.59	4	2	0.50	22	7	0.32	50	77	1.53
South Dakota	15	15	1.00	8	5	0.60	35	11	0.31	42	69	1.66
Texas	20	10	0.51	4	2	0.47	18	5	0.27	58	83	1.44
Utah	25	19	0.76	4	3	0.77	20	9	0.46	52	69	1.33
Washington	27	16	0.59	2	1	0.45	14	4	0.30	57	79	1.38
Wyoming	22	19	0.87	6	4	0.70	31	13	0.42	42	64	1.53

[1]R = Percent of respondents prior to weighting.
[2]NS = Estimates obtained from the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of the Interior & U.S. Department of Commerce, 2001).
[3]Weights were calculated using the formula, (x)(Respondent %) = Population %, where x is the required weighting factor. Weights were determined using percentages carried out to two decimal places. Percentages appearing in this table have been rounded to whole numbers for consistency in reporting and ease of interpretation.

Table E-5. Percent of respondents in selected participation categories, defined by involvement in wildlife-related recreation activities in the past year, by state following weighting compared to estimates obtained from census-based sources.

State	Fish only		Hunt only		Fish and hunt		Non-participant	
	Weighted[1]	National Survey[2]	Weighted	National Survey	Weighted	National Survey	Weighted	National Survey
Alaska	31	29	3	4	13	12	53	55
Arizona	8	8	1	1	2	2	88	89
California	9	9	0	1	1	1	89	90
Colorado	17	16	2	2	4	4	77	78
Hawai`i	12	11	1	1	3	2	84	86
Idaho	16	16	6	5	12	11	67	68
Kansas	15	14	3	3	8	7	75	76
Montana	15	15	8	8	17	16	59	61
Nebraska	15	14	3	3	8	7	74	76
Nevada	11	10	1	1	2	2	86	87
New Mexico	12	11	3	3	7	6	79	80
North Dakota	17	16	6	6	13	13	63	65
Oklahoma	21	19	2	2	9	8	68	71
Oregon	14	14	2	2	7	7	77	77
South Dakota	17	15	5	5	12	11	66	69
Texas	10	10	2	2	5	5	83	83
Utah	19	19	3	3	9	9	69	69
Washington	16	16	1	1	4	4	79	79
Wyoming	20	19	4	4	15	13	62	64

[1]Percent of respondents obtained from data weighted first by participation in wildlife-related recreation and then by age. Age percentages are not reported here, as they are precisely in line with census (i.e., U.S. Census 2000 [U.S. Census Bureau, 2002] projections to the year 2003 that were formulated by Scan/US, Inc. and provided to Survey Sampling, Inc.) given that age was the final variable used in the weighting process.
[2]National Survey information based on estimates reported by the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of the Interior & U.S. Department of Commerce, 2001).

Table E-6. Percent of respondents in gender categories by state before and after weighting, compared to estimates obtained from census-based sources.

State	Male			Female		
	Respondents[1]	Census[2]	Weighted[3]	Respondents	Census	Weighted
Alaska	62	52	52	38	48	48
Arizona	59	49	49	41	51	51
California	62	49	52	38	51	48
Colorado	59	50	50	41	50	50
Hawai`i	58	50	49	42	50	51
Idaho	65	50	51	35	50	49
Kansas	56	49	48	44	51	52
Montana	62	49	55	38	51	45
Nebraska	64	49	54	36	51	46
Nevada	61	51	53	39	49	47
New Mexico	58	49	50	42	51	50
North Dakota	60	50	50	40	50	50
Oklahoma	57	48	48	43	52	52
Oregon	60	49	46	40	51	54
South Dakota	63	49	50	37	51	50
Texas	61	49	50	39	51	50
Utah	63	50	56	37	50	44
Washington	61	49	53	39	51	48
Wyoming	62	50	50	38	50	50

[1]Percent of respondents prior to weighting.
[2]Census information based on U.S. Census 2000 (U.S. Census Bureau, 2002) estimates.
[3]Percent of respondents obtained from data weighted first by participation in wildlife-related recreation and then by age.

Table E-7. Representation of participating states as defined by proportion of the regional population[1].

State	Population size[2]	Number of respondents	Percent of regional population	Percent of regional sample	Weight[3]
Alaska	626932	548	1	4	0.16
Arizona	5130632	497	6	4	1.40
California	33871648	554	36	4	8.30
Colorado	4301261	641	5	5	0.91
Hawai`i	1211537	634	1	5	0.26
Idaho	1293953	828	1	7	0.21
Kansas	2688418	535	3	4	0.68
Montana	902195	901	1	7	0.14
Nebraska	1711263	674	2	5	0.34
Nevada	1998257	633	2	5	0.43
New Mexico	1819046	859	2	7	0.29
North Dakota	642200	715	1	6	0.12
Oklahoma	3450654	754	4	6	0.62
Oregon	3421399	617	4	5	0.75
South Dakota	754844	751	1	6	0.14
Texas	20851820	547	22	4	5.18
Utah	2233169	608	2	5	0.50
Washington	5894121	549	6	4	1.46
Wyoming	493782	828	1	7	0.08
Total Population	93297131	12673			

[1]In certain instances in this report (see discussion of results on "biodiversity" regional issue), data are reported by subregion as opposed to by state or by western region. Under these circumstances, it was necessary to apply "subregional weights" which are regional weights adjusted to account for population sizes of each subregion. The subregions are (1) California, Washington, Oregon and Idaho; (2) Montana, Wyoming, North Dakota, and South Dakota; (3) Kansas, Nebraska, Oklahoma, and Texas; and (4) Colorado, Arizona, Nevada, Utah, and New Mexico.
[2]U.S. Census 2000 (U.S. Census Bureau, 2002) information was used to determine population sizes of each participating state for purposes of weighting to report results at the regional level.
[3]Weights were calculated using the formula, (x)(Sample %) = Population %, where x is the required weighting factor. Weights were determined using percentages carried out to two decimal places. Percentages appearing in this table have been rounded to whole numbers for consistency in reporting and ease of interpretation.

References

Elliot, D. (1991). *Weighting for non-response: A survey researcher's guide*. London: Office for National Statistics.

U.S. Census Bureau. (2002). *2000 Census of Population and Housing.* Washington, DC: U.S. Census Bureau.

U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce, U.S. Census Bureau. (2001). *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*. Washington, DC: U.S. Department of the Interior.

APPENDIX F. REPRESENTATIVENESS OF PROJECT DATA
PART 2: CONVERGENT VALIDITY OF PROJECT FINDINGS

Our examination of the representativeness of project data was a two-part procedure. First, we conducted comparisons of respondents and nonrespondents. Results of these comparisons, presented in Appendix D, led to the decision to weight project data on certain key variables – i.e., age and participation in wildlife-related recreation activities. The next step in examining the representativeness of our data was to explore the convergent validity of project findings. This appendix reports the results of this exploration.

To investigate convergent validity, we compared, where possible, relationships between key concepts documented in this report with those obtained using independent and semi-independent sources of information. The question we examined was as follows: are the relationships reported in the current study confirmed by findings obtained from alternative procedures?

1. Comparison with a Semi-Independent Source

We first compared two alternative procedures for deriving state-level relationships between wildlife value orientations and one of the "driving forces" of societal change – income. The estimates for income, the independent variable, used in both procedures were obtained from the U.S. Census (U.S. Census Bureau, 2002). Wildlife value orientations, the dependent measure, were approximated through use of basic belief items that appeared on both the mail and telephone surveys.

Estimates for percent agreement with the items were obtained as follows in the two procedures:

Procedure 1: Use of Weighted Data from Current Study

This procedure corresponds to that used for relationships documented in this report. Estimates for percent agreement were obtained on a per-state basis from respondent data weighted on the basis of age and participation in wildlife-related recreation.

Procedure 2: Use of Combined Respondent-Nonrespondent Data

Estimates for percent agreement were obtained on a per-state basis through data derived from combined respondent-nonrespondent samples. Estimates were calculated in this context using the following formula:

Population Estimate =

(1-Mail Survey Response Rate)(Nonrespondent %) + (Mail Survey Response Rate)(Respondent %)

Results show minimal differences between the two procedures in the state-level relationship between income and wildlife value orientations (Figures F-1 through F-4). A test for statistical significance confirms the similarity in revealing that correlations corresponding to these semi-independent sources were not significantly different from one another ($p < .05$; Table F-1).

2. Comparison with a Completely Independent Source

Data reported in the current study indicate a relationship between income and the composition of wildlife value orientations across states. Because wildlife value orientations are theorized to influence wildlife-related behaviors (see Section II), we would also expect a relationship between income, as a driving force of wildlife value orientation shift, and certain behaviors such as hunting at the state level. We tested this hypothesis using data not collected in the current study.

Estimates for percentages of hunters across states were obtained from the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of the Interior & U.S. Department of Commerce, 2001). Income estimates were obtained from the U.S. Census (U.S. Census Bureau, 2002). As Figure F-5 shows, we found a significant relationship between these measures in the direction we would expect based on theory and findings documented in this report (r = -.59).

Conclusion

As described in the social science literature (e.g., Nunnally & Bernstein, 1994), the concept of validity can be viewed as a "continuum," along which there are varying *degrees* of agreement between measures or between methods of estimating population phenomena. Applied broadly, the term convergent validity is concerned with the degree to which different methods of inferring a relationship arrive at similar conclusions.

In this appendix, we described how several different methods of estimation produced a reasonably strong degree of validation for the key theoretical relationships reported in the current study. Through the use of both independent and semi-independent sources of information, we were able to demonstrate support for study findings. We encourage future exploration and testing that can further validate the conclusions reached in this study.

Figure F-1. Population estimate obtained from *combined respondent-nonrespondent data* for state-level agreement with the item, "Animals should have rights similar to the rights of humans," by income as reported by the U.S. Census (U.S. Census Bureau, 2002).

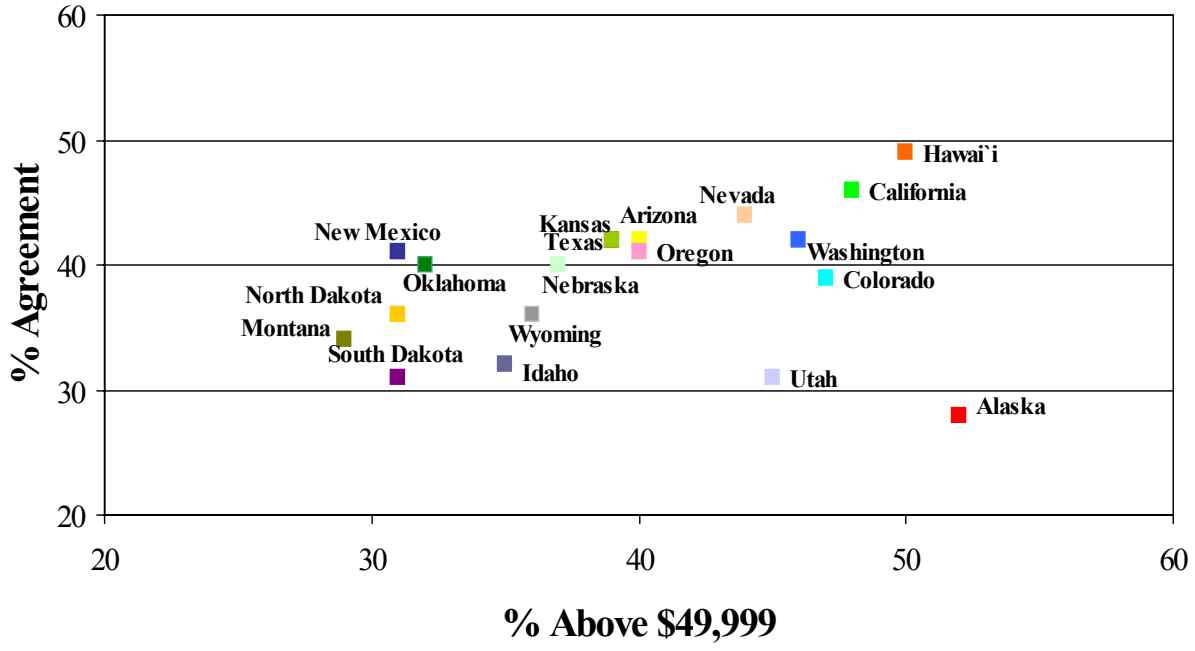


Figure F-2. Population estimate obtained from *weighted data* for state-level agreement with the item, "Animals should have rights similar to the rights of humans," by income as reported by the U.S. Census (U.S. Census Bureau, 2002).

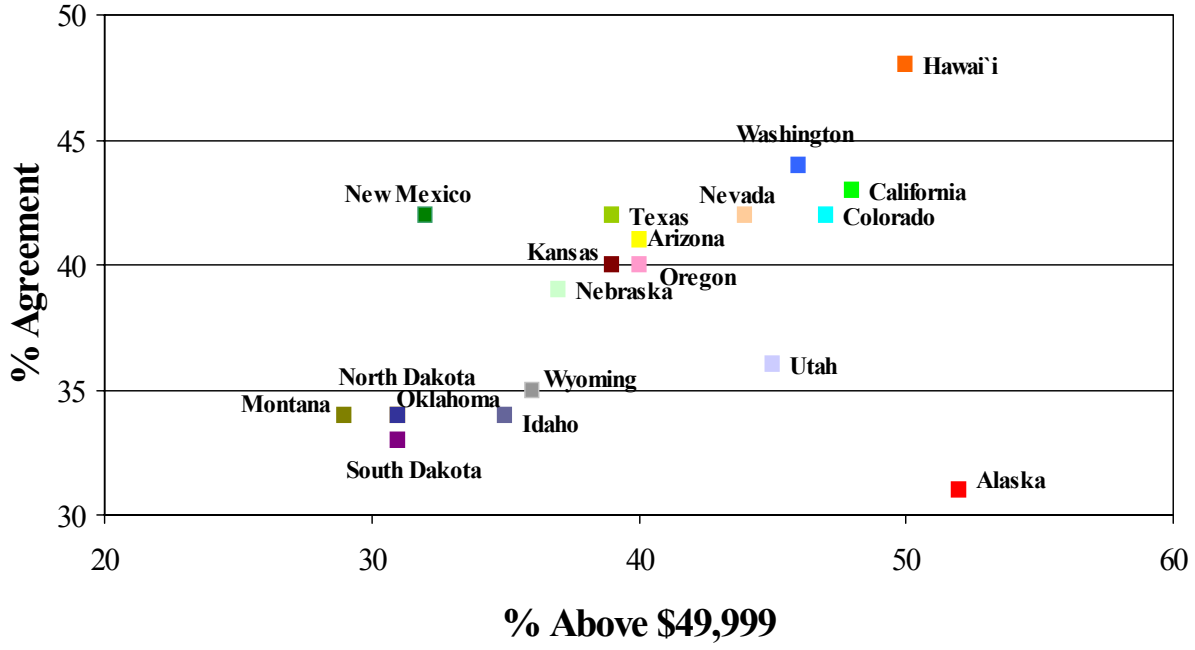


Figure F-3. Population estimate obtained from *combined respondent-nonrespondent data* for state-level agreement with the item, "People who want to hunt should be provided the opportunity to do so," by income as reported by the U.S. Census (U.S. Census Bureau, 2002).

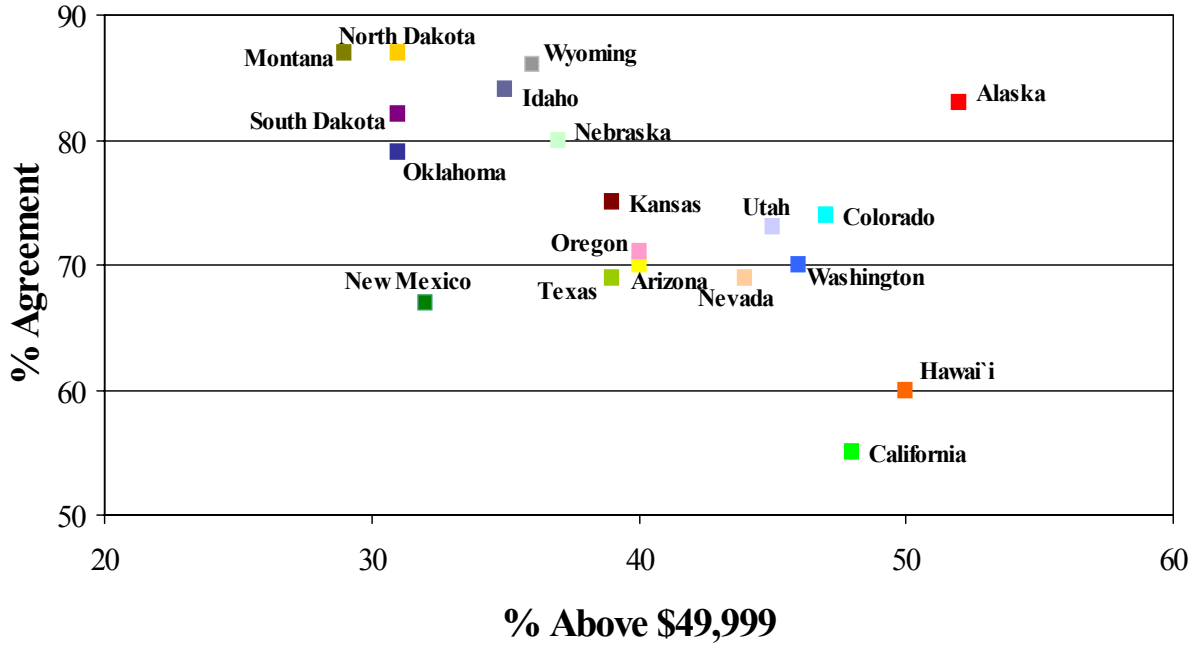


Figure F-4. Population estimate obtained from *weighted data* for state-level agreement with the item, "People who want to hunt should be provided the opportunity to do so," by income as reported by the U.S. Census (U.S. Census Bureau, 2002).

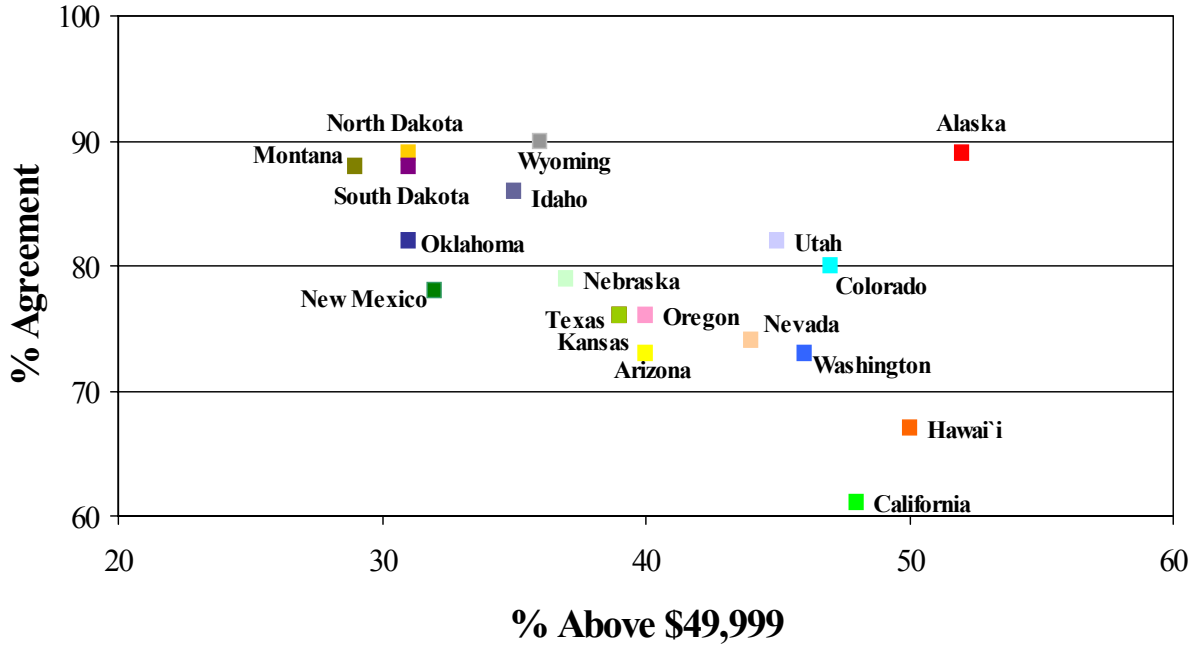
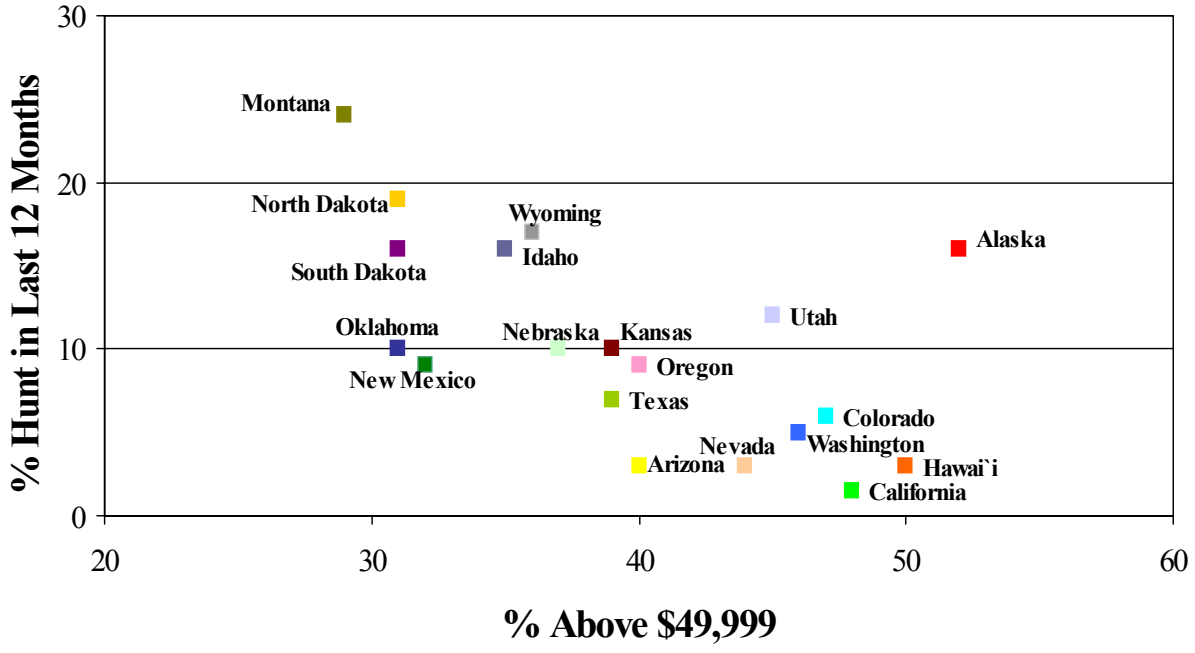


Table F-1. Comparison of correlations for the relationship between income reported by the U.S. Census (U.S. Census Bureau, 2002) and items approximating wildlife value orientations across two methods for obtaining population estimates.

Item	Respondent-nonrespondent *r* (z-score)[1]	Weighted data *r* (z-score)[2]	SE for difference[3]	Z-value for difference[4]
Animals should have rights similar to the rights of humans.	.26 (.2661)	.48 (.5230)	.3536	.73[NS]
People who want to hunt should be provided the opportunity to do so.	-.57 (-.6475)	-.53 (-.5901)	.3536	.16[NS]

[1]Pearson's correlation and corresponding z-score for relationship between state-level income reported by the U.S. Census and population estimates on the wildlife value orientation item obtained from combined respondent-nonrespondent data.
[2]Pearson's correlation and corresponding z-score for relationship between state-level income reported by the U.S. Census and population estimates on the wildlife value orientation item obtained from weighted data (i.e., final project data weighted by age and participation in wildlife-related recreation).
[3]Standard error calculated using the following formula: $SE = SQRT[(1/(n_1-3)) + (1/(n_2-3))]$
[4]Z-value calculated using the following formula: $Z_{difference} = (z\text{-}score_1 - zscore_2)/SE_{difference}$; formula for statistical test of difference in correlation coefficients reported in Blalock (1972).
[NS]Difference not statistically significant at $p < .05$ (i.e., z-value < 1.96).

Figure F-5. Population estimate for state-level prevalence of hunting obtained from the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of the Interior & U.S. Department of Commerce, 2001), by income as reported by the U.S. Census (U.S. Census Bureau, 2002).



References

Blalock, Jr., H. M. (1972). *Social statistics*, 2nd edition. NY: McGraw-Hill.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York, NY: McGraw Hill.

U.S. Census Bureau. (2002). *2000 Census of Population and Housing.* Washington, DC: U.S. Census Bureau.

U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce, U.S. Census Bureau. (2001). *2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*. Washington, DC: U.S. Department of the Interior.

APPENDIX G. MAIL SURVEY INSTRUMENT (REGIONAL SECTION ONLY)

[survey cover]

Management of Fish and Wildlife in the West

A study conducted cooperatively by:

(note: participating state agency logo also included on cover)

Colorado State University

Knowledge to Go Places

WESTERN ASSOCIATION OF FISH AND WILDLIFE AGENCIES

This survey is for <u>all</u> citizens of your state!
Even if you know little about wildlife,
your opinions are needed!

Fall 2004

[inside cover]

PLEASE READ BEFORE COMPLETING THIS SURVEY:

This survey is being sent to people residing in states throughout the West. Please note that, while some of the questions in this survey may not be relevant to <u>your state specifically</u>, we are still interested in your opinions because they are relevant to other states in the western region.

Section I.

We begin this survey by asking you about the goals for our country. Below are 3 groups of goals that people might prioritize differently. ***For each group, rank the 4 goals in order of importance to you.*** **That is:**

1 = the goal most important to YOU
2 = the 2nd most important goal
3 = the 3rd most important goal
4 = the least important goal

Group 1. Rank these 4 goals from most important (1) to least important (4). Please no ties (meaning, DO NOT GIVE ANY OF THESE ITEMS THE SAME RANK). Group 1 Rank

- Maintain a high level of economic growth. _____
- See that people have more to say about how things are done at their jobs and in their communities. _____
- Make sure this country has strong defense forces. _____
- Try to make our cities and countryside more beautiful. _____

Group 2. Repeat now for this next set of goals (1=most important, 4=least important). Please no ties (meaning, DO NOT GIVE ANY OF THESE ITEMS THE SAME RANK). Group 2 Rank

- Maintain order in the nation. _____
- Give people more to say in important government decisions. _____
- Fight rising prices. _____
- Protect freedom of speech. _____

Group 3. Repeat again for this final set of goals (1=most important, 4=least important). Please no ties (meaning, DO NOT GIVE ANY OF THESE ITEMS THE SAME RANK). Group 3 Rank

- Maintain a stable economy. _____
- Progress toward a less impersonal and more humane society. _____
- Fight crime. _____
- Progress toward a society in which ideas count more than money. _____

Below are statements that represent a variety of ways people feel about fish and wildlife and the natural environment. Please indicate the extent to which you disagree or agree with each statement. ***Circle one number for each statement.***

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
1. Humans should manage fish and wildlife populations so that humans benefit.	1	2	3	4	5	6	7
2. We should strive for a world where humans and fish and wildlife can live side by side without fear.	1	2	3	4	5	6	7
3. We should strive for a world where there's an abundance of fish and wildlife for hunting and fishing.	1	2	3	4	5	6	7
4. The needs of humans should take priority over fish and wildlife protection.	1	2	3	4	5	6	7
5. I view all living things as part of one big family.	1	2	3	4	5	6	7
6. Animals should have rights similar to the rights of humans.	1	2	3	4	5	6	7
7. Wildlife are like my family and I want to protect them.	1	2	3	4	5	6	7
8. People should never be allowed to use any fish or wildlife for any reason.	1	2	3	4	5	6	7

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
9. It is acceptable for people to kill wildlife if they think it poses a threat to their life.	1	2	3	4	5	6	7
10. It is acceptable for people to kill wildlife if they think it poses a threat to their property.	1	2	3	4	5	6	7
11. If I had to walk in the outdoors, I would be worried about encountering a wild animal.	1	2	3	4	5	6	7
12. It is acceptable to use fish and wildlife in research even if it may harm or kill some animals.	1	2	3	4	5	6	7
13. Fish and wildlife are on earth primarily for people to use.	1	2	3	4	5	6	7
14. If I were around wildlife in the outdoors I would be uncomfortable.	1	2	3	4	5	6	7
15. Hunting is cruel and inhumane to the animals.	1	2	3	4	5	6	7
16. I have concerns about being around wildlife because they may carry a disease.	1	2	3	4	5	6	7
17. I am not interested in knowing anything more about fish and wildlife.	1	2	3	4	5	6	7
18. It would be more rewarding to me to help animals rather than people.	1	2	3	4	5	6	7
19. I have concerns about being around wildlife because they may hurt me.	1	2	3	4	5	6	7
20. I am really not that interested in fish and wildlife.	1	2	3	4	5	6	7
21. Advances in technology will eventually provide a solution to our environmental problems.	1	2	3	4	5	6	7
22. I care about animals as much as I do other people.	1	2	3	4	5	6	7
23. People who want to hunt should be provided the opportunity to do so.	1	2	3	4	5	6	7
24. I take great comfort in the relationships I have with animals.	1	2	3	4	5	6	7
25. I value the sense of companionship I receive from animals.	1	2	3	4	5	6	7
26. The natural environment should be protected for its own sake rather than simply to meet our needs.	1	2	3	4	5	6	7
27. Hunting does not respect the lives of animals.	1	2	3	4	5	6	7
28. I feel a strong emotional bond with animals.	1	2	3	4	5	6	7
29. We should strive for a society that emphasizes environmental protection over economic growth.	1	2	3	4	5	6	7
30. Science can provide answers to any problems that we encounter in nature.	1	2	3	4	5	6	7
31. Protecting the natural environment should be this country's top priority.	1	2	3	4	5	6	7
32. We can find solutions to environmental problems through science and technology.	1	2	3	4	5	6	7

Section II.

This section asks your opinion about key regional issues that are important in one or more western states. Some of these issues may not be present in your state specifically. However, your opinion is still important to us. ***For each set of questions, please follow the directions that are provided.***

State fish and wildlife agencies hear from many different groups of people about their interests, making decisions and priorities difficult. Below is a series of hypothetical approaches that describe how priorities *could* be directed. ***Please read about each approach. Then tell us how you think things are now and how they should be in your state based on these approaches by answering the 2 questions that follow.***

APPROACH 1
- State agencies develop programs that meet the needs primarily of those who hunt and/or fish.
- Fish and wildlife management is **almost entirely funded by hunting and fishing license dollars**.

APPROACH 2
- State agencies develop programs that meet the needs primarily of those who hunt and/or fish.
- Fish and wildlife management is **substantially funded by both hunting and fishing license dollars *and* public taxes**.

APPROACH 3
- State agencies develop programs that meet the needs of all members of the public regardless of their level of interest in wildlife.
- Fish and wildlife management is **almost entirely funded by hunting and fishing license dollars**.

APPROACH 4
- State agencies develop programs that meet the needs of all members of the public regardless of their level of interest in wildlife.
- Fish and wildlife management is **substantially funded by both hunting and fishing license dollars *and* public taxes**.

1. Of the above approaches, which approach do you think best resembles how things are now in your state? *Check only one (☑).*

❒ **Approach 1** ❒ **Approach 2** ❒ **Approach 3** ❒ **Approach 4**

2. Which approach best represents your opinion of how things should be in your state? *Check only one (☑).*

❒ **Approach 1** ❒ **Approach 2** ❒ **Approach 3** ❒ **Approach 4**

We would like to know how you feel about the extent to which your state fish and wildlife agency listens to and considers your opinions in fish and wildlife decision-making. Please indicate how strongly you disagree or agree with each of the following statements. ***Circle one number for each statement.***

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
1. I feel that my opinions are heard by fish and wildlife decision-makers in my state.	1	2	3	4	5	6	7
2. I feel that my interests are adequately taken into account by fish and wildlife decision-makers in my state.	1	2	3	4	5	6	7
3. I feel that if I provide input, it will make a difference in fish and wildlife decisions in my state.	1	2	3	4	5	6	7
4. I feel that my state fish and wildlife agency makes a good effort to obtain input from the public as a whole.	1	2	3	4	5	6	7
5. I don't have an interest in providing input to fish and wildlife decisions in my state.	1	2	3	4	5	6	7
6. I trust my state fish and wildlife agency to make good decisions without my input.	1	2	3	4	5	6	7

Please respond to the following questions about the extent to which you trust certain forms of government. ***Circle one number for each statement.***

Overall, to what extent do you trust…	**Almost Never**	**Only Some of the Time**	**Most of the Time**	**Almost Always**
1. …your federal government to do what is right for your country?	1	2	3	4
2. …your state government to do what is right for your state?	1	2	3	4
3. …your state fish and wildlife agency to do what is right for fish and wildlife management in your state?	1	2	3	4

Fish and wildlife agencies want to know how the public thinks the agencies should respond to human-wildlife conflict situations. Below are two IMAGINARY situations involving black bears. We would like to know how you feel about certain management actions that could be directed at bear populations to address these situations. ***Even though it may seem unlikely that these things could occur where you live, we are still interested in your opinions.***

(PLEASE TELL US HOW YOU FEEL ABOUT THE ACTIONS LISTED BELOW FOR EACH SITUATION)

ACTIONS:	**SITUATION 1** Bears are wandering into areas where humans live in search of food. Bears are getting into trash and pet food containers.		**SITUATION 2** Bears are wandering into areas where humans live in search of food. Human deaths from bear attacks have occurred.	
Is it unacceptable or acceptable to….	**Unacceptable**	**Acceptable**	**Unacceptable**	**Acceptable**
1. ...do nothing to control bear populations?	❒	❒	❒	❒
2. …provide more recreational opportunities to hunt bears?	❒	❒	❒	❒
3. …conduct controlled hunts using trained agency staff?	❒	❒	❒	❒

Below are two IMAGINARY situations involving deer. We would like to know how you feel about certain management actions that could be directed at deer populations to address these situations. ***Even though it may seem unlikely that these things could occur where you live, we are still interested in your opinions.***

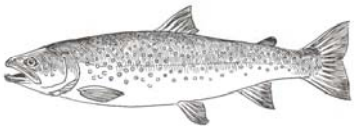
(PLEASE TELL US HOW YOU FEEL ABOUT THE ACTIONS LISTED BELOW FOR EACH SITUATION)

ACTIONS:	**SITUATION 1** Deer numbers are increasing. There are complaints about deer entering people's yards and eating shrubs and garden plants.		**SITUATION 2** Deer numbers are increasing. Authorities are concerned because deer are carrying a disease that is transmissible to some domestic animals and livestock.	
Is it unacceptable or acceptable to….	**Unacceptable**	**Acceptable**	**Unacceptable**	**Acceptable**
1. ...do nothing to control deer populations?	❒	❒	❒	❒
2. …provide more recreational opportunities to hunt deer?	❒	❒	❒	❒
3. …conduct controlled hunts using trained agency staff?	❒	❒	❒	❒
4. …distribute pellets containing contraceptives, causing deer to be unable to produce offspring permanently?	❒	❒	❒	❒
5. …distribute pellets containing contraceptives, causing deer to be unable to produce offspring for only a few breeding seasons?	❒	❒	❒	❒

A fish and wildlife agency manager of <u>a particular area</u> may have limited funds to spend on conservation programs for fish and wildlife. As a result, difficult choices must be made about what type of fish or wildlife deserves the greatest priority. This often involves evaluating different combinations of characteristics of the fish or wildlife. Below is a series of <u>hypothetical</u> comparisons that illustrate the kinds of choices that might be made for an area. ***For each comparison please select the choice with the characteristics you think the manager should spend funds on to maintain or enhance the fish or wildlife population.***

These are hypothetical comparisons. *Even though some of these fish or wildlife may not be present <u>where you live</u>, we are still interested in your opinions.*

1. Which should the manager spend funds on? *(Check one ☑.)*

❒ **CHOICE A**		❒ **CHOICE B**
➢ This species does not naturally occur in the area. It was introduced by humans. ➢ Common in the area, and numbers are stable. ➢ Not a hunted/fished species. **Example: Eastern Fox Squirrel** 	⇔ ***OR***	➢ This species naturally occurs in the area. ➢ Numbers are low, which means you don't see this species very often anymore. ➢ Hunted/fished species. **Example: Bull Trout** 

---

2. Which should the manager spend funds on? *(Check one ☑.)*

❒ **CHOICE A**		❒ **CHOICE B**
➢ This species does not naturally occur in the area. It was introduced by humans. ➢ Even though it did exist here at one time, it is no longer present in the area under consideration. ➢ Hunted/fished species. **Example: Red-legged Partridge**  Survey illustrations © Ram Papish	⇔ ***OR***	➢ This species naturally occurs in the area. ➢ Common in the area, and numbers are stable. ➢ Not a hunted/fished species. **Example: Redtailed Hawk** 

3. Which should the manager spend funds on? *(Check one ☑.)*

❒ CHOICE A		❒ CHOICE B
➢ This species naturally occurs in the area. ➢ Even though it did exist here at one time, it is no longer present in the area under consideration. ➢ Not a hunted/fished species. **Example: California Condor** 	⇔ ***OR***	➢ This species does not naturally occur in the area. It was introduced by humans. ➢ Common in the area, and numbers are stable. ➢ Hunted/fished species. **Example: Wild Turkey** 

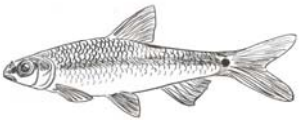
---

4. Which should the manager spend funds on? *(Check one ☑.)*

❒ CHOICE A		❒ CHOICE B
➢ This species naturally occurs in the area. ➢ Common in the area, and numbers are stable. ➢ Hunted/fished species. **Example: Mallard** 	⇔ ***OR***	➢ This species does not naturally occur in the area. It was introduced by humans. ➢ Numbers are low, which means you don't see this species very often anymore. ➢ Not a hunted/fished species. **Example: Monk Parakeet** 

---

5. Which should the manager spend funds on? *(Check one ☑.)*

❒ CHOICE A		❒ CHOICE B
➢ This species naturally occurs in the area. ➢ Numbers are low, which means you don't see this species very often anymore. ➢ Hunted/fished species. **Example: Sage Grouse** 	⇔ ***OR***	➢ This species does not naturally occur in the area. It was introduced by humans. ➢ Even though it did exist here at one time, it is no longer present in the area under consideration. ➢ Not a hunted/fished species. **Example: Spottail Shiner** 

6. Which should the manager spend funds on? *(Check one ☑.)*

❒ CHOICE A		❒ CHOICE B
➢ This species does not naturally occur in the area. It was introduced by humans. ➢ Numbers are low, which means you don't see this species very often anymore. ➢ Not a hunted/fished species. **Example: Eurasian Skylark** 	⇔ ***OR***	➢ This species naturally occurs in the area. ➢ Even though it did exist here at one time, it is no longer present in the area under consideration. ➢ Hunted/fished species. **Example: Sharp-tailed Grouse** 

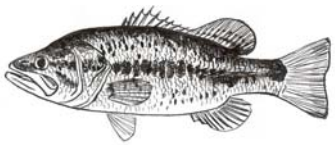
---

7. Which should the manager spend funds on? *(Check one ☑.)*

❒ CHOICE A		❒ CHOICE B
➢ This species naturally occurs in the area. ➢ Common in the area, and numbers are stable. ➢ Not a hunted/fished species. **Example: American Robin** 	⇔ ***OR***	➢ This species does not naturally occur in the area. It was introduced by humans. ➢ Numbers are low, which means you don't see this species very often anymore. ➢ Hunted/fished species. **Example: Ring-necked Pheasant** 

---

8. Which should the manager spend funds on? *(Check one ☑.)*

❒ CHOICE A		❒ CHOICE B
➢ This species does not naturally occur in the area. It was introduced by humans. ➢ Common in the area, and numbers are stable. ➢ Hunted/fished species. **Example: Largemouth Bass** 	⇔ ***OR***	➢ This species naturally occurs in the area. ➢ Numbers are low, which means you don't see this species very often anymore. ➢ Not a hunted/fished species. **Example: Flammulated Owl** 

Section III.

We would like to learn about your fish- and wildlife-related recreation activities. *Please check your response (☑).*

1.	Have you ever participated in recreational (non-commercial) fishing?	❒ Yes	❒ No
2.	Did you participate in recreational (non-commercial) fishing during the past 12 months (1 year)?	❒ Yes	❒ No
3.	Have you ever participated in recreational (non-commercial) hunting?	❒ Yes	❒ No
4.	Did you participate in recreational (non-commercial) hunting during the past 12 months (1 year)?	❒ Yes	❒ No
5.	Have you ever taken any recreational trips for which fish or wildlife viewing was the primary purpose of the trip?	❒ Yes	❒ No
6.	Did you take any recreational trips in the past 12 months (1 year) for which fish or wildlife viewing was the primary purpose of the trip?	❒ Yes	❒ No

Please respond to the following 3 questions about your interest in participating in fish- and wildlife-related recreation in the future. *Circle one number for each statement.*

		Not at all Interested	Slightly Interested	Moderately Interested	Strongly Interested
1.	How interested are you in taking recreational fishing trips in the future?	1	2	3	4
2.	How interested are you in taking recreational hunting trips in the future?	1	2	3	4
3.	How interested are you in taking recreational trips in the future for which fish or wildlife viewing is the primary purpose of the trip?	1	2	3	4

Now we would like to know more about your interest in taking specific trips to view wildlife.

How likely is it that you would consider taking one of the following trips in the future? *Circle one number for each statement.*

		Not at all Likely	Slightly Likely	Moderately Likely	Extremely Likely
1.	…a trip to Africa to go on a safari to view wildlife?	1	2	3	4
2.	…a trip to a remote area of Alaska to view wildlife?	1	2	3	4

The following demographic information will be used to help make general conclusions about the residents of this state. Your responses will remain completely confidential.

1. Are you…? ❒ Male ❒ Female

2. What is your age? (*Write response.*) _____ Years

3. How many people under 18 years of age are currently living in your household? (*Write response.*) _____ Person(s)

4. What is the highest level of education that you have achieved? (*Check only one ☑.*)
   - ❒ Less than high school diploma
   - ❒ High school diploma or equivalent (for example, GED)
   - ❒ 2-year associates degree or trade school
   - ❒ 4-year college degree
   - ❒ Advanced degree beyond 4-year college degree

5. What is your approximate annual household income before taxes? (*Check one ☑.*)

❒ Less than $10,000
❒ $10,000 - $29,999
❒ $30,000 - $49,999
❒ $50,000 - $69,999
❒ $70,000 - $89,999
❒ $90,000 - $109,999
❒ $110,000 - $129,999
❒ $130,000 - $149,999
❒ $150,000 or more

6. About how long have you lived in California? (*Write response or check box☑ indicating less than one year.*)

_____ Years, OR ❒ Less than one year.

7. How would you describe your current residence or community? (*Check one ☑.*)

❒ Large city with 250,000 or more people
❒ City with 100,000 to 249,999 people
❒ City with 50,000 to 99,999 people
❒ Small city with 25,000 to 49,999 people
❒ Town with 10,000 to 24,999 people
❒ Town with 5,000 to 9,999 people
❒ Small town / village with less than 5,000 people
❒ A farm or rural area

8. Would you consider your current residence a **suburb** of a larger city or metropolitan area? (*Check one ☑.)*

❒ Yes ❒ No

9. How would you describe the community in which you were raised? (*Check one ☑.*) If more than one area, check the place where you lived the longest.

❒ Large city with 250,000 or more people
❒ City with 100,000 to 249,999 people
❒ City with 50,000 to 99,999 people
❒ Small city with 25,000 to 49,999 people
❒ Town with 10,000 to 24,999 people
❒ Town with 5,000 to 9,999 people
❒ Small town / village with less than 5,000 people
❒ A farm or rural area

10. Would you consider the community in which you were raised a **suburb** of a larger city or metropolitan area? (*Check one ☑.)*

❒ Yes ❒ No

11. Are you…? (*Check one or more categories to indicate what you consider yourself to be.)*

❒ White, NOT of Hispanic origin
❒ Black or African American, NOT of Hispanic origin
❒ Spanish, Hispanic, or Latino
❒ Native American or Alaska Native
❒ Asian
❒ Native Hawaiian
❒ Other Pacific Islander
❒ Other (*Please print on line below.*)

_____

12. While many people in America view themselves as "Americans," we are interested in finding out more about how you would define your ethnic background. What is **the primary ethnic origin with which you identify yourself**? (*for example, Italian, Jamaican, Norwegian, Dominican, Korean, Mexican, Taiwanese, Ukrainian, and so on*)

(*Please write your ethnic origin.*) _____

Thank you for participating in this study. Your input is very important!

Please return the completed survey as soon as possible in the enclosed addressed and postage-paid envelope.