

C O L O R A D O P A R K S & W I L D L I F E

Conservation at the intersection: Examining residents' perceptions of and preferences for wildlife, outdoor recreation, and development

TECHNICAL PUBLICATION NUMBER 60 • JULY 2022



COVER AND INSIDE PHOTOS

Photo credit: Rick Spitzer

TO CITE THIS PUBLICATION

Filtz, R., Kurtz, J., & Quartuch, M.R., (2022). Conservation at the intersection: Examining residents' perceptions of and preferences for wildlife, outdoor recreation, and development. Colorado Parks and Wildlife, technical report series No. 60.

Copies of this publication may be obtained from
Colorado Parks and Wildlife Research Center Library,
317 West Prospect, Fort Collins, CO 80526.

**Conservation at the intersection:
Examining residents' perceptions of and preferences for
wildlife, outdoor recreation, and development**

Mike Quartuch, Ph.D., *Human Dimensions Specialist/Researcher*



Technical Publication No. 60

Colorado Parks and Wildlife

July 2022

CPW-R-T-60-22 ISSN 0084-8883

STATE OF COLORADO

Jared Polis, *Governor*

DEPARTMENT OF NATURAL RESOURCES

Dan Gibbs, *Executive Director*

COLORADO PARKS AND WILDLIFE COMMISSION

Carrie Besnette Hauser, *Chair*; Dallas May, *Vice-Chair*; Marie Haskett, *Secretary*; Taishya Adams, Betsy Blecha, Karen Michelle Bailey, Duke Phillips IV, James Jay Tutchtou, Eden Varney, Gabriel Otero and Richard Reading. *Ex Officio/Non-Voting Members*: Kate Greenberg, Dan Gibbs and Heather Dugan

COLORADO PARKS AND WILDLIFE

Heather Dugan, *Acting Director*

LEADERSHIP TEAM

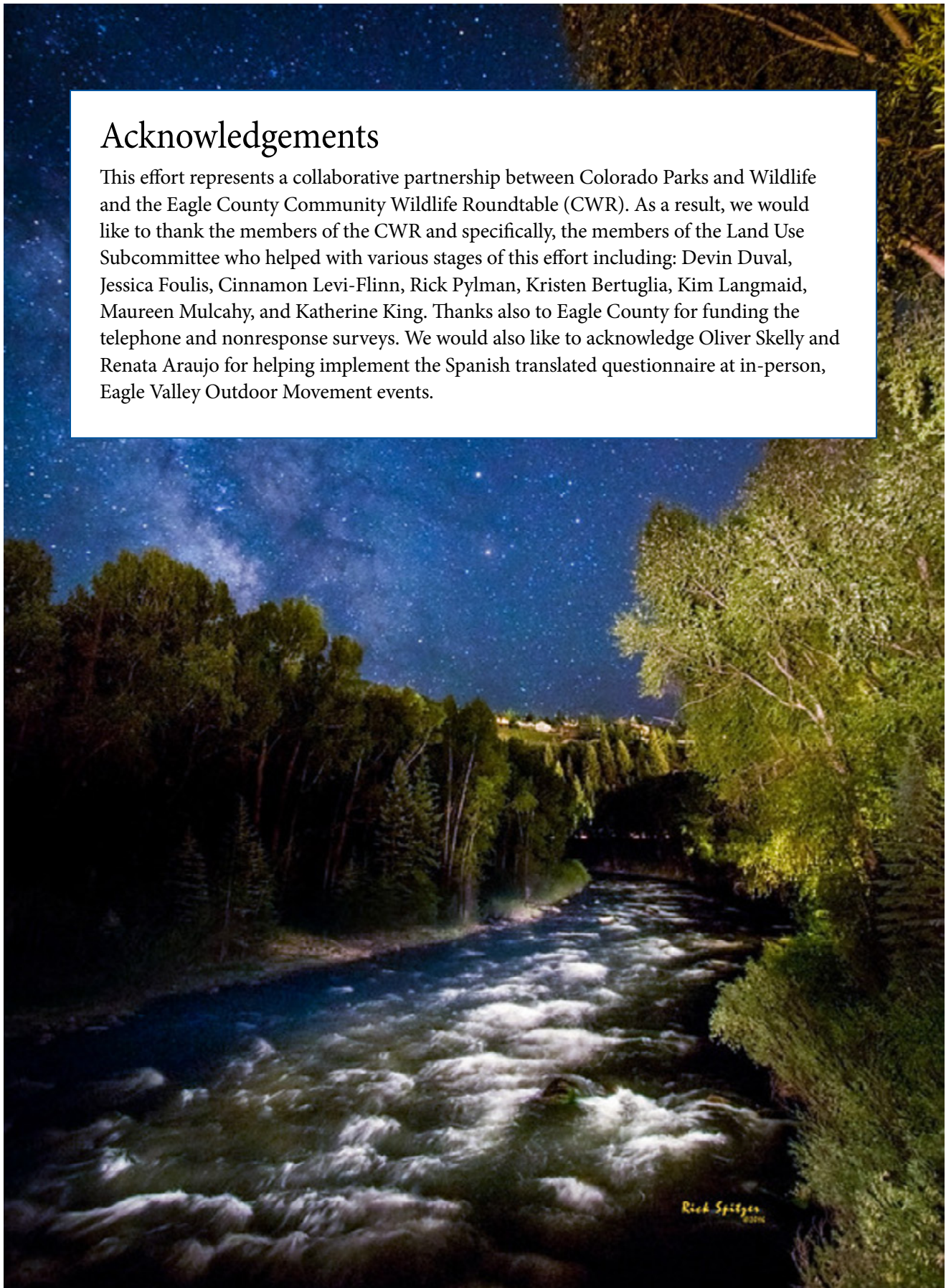
Reid DeWalt, *Assistant Director for Aquatic, Terrestrial and Natural Resources*; Justin Rutter, *Assistant Director for Financial Services*; Lauren Truitt, *Assistant Director for Information and Education*; Jeff Ver Steeg, *Assistant Director for Research, Policy and Planning*; Mitch Martin, *Southeast Region (acting) Manager*; Cory Chick, *Southwest Region Manager*; Mark Leslie, *Northeast Region Manager*; Travis Black, *Northwest Region Manager*; Ty Peterburg, *Assistant Director (acting) for field services*

STUDY FUNDED BY

Colorado Parks and Wildlife

Acknowledgements

This effort represents a collaborative partnership between Colorado Parks and Wildlife and the Eagle County Community Wildlife Roundtable (CWR). As a result, we would like to thank the members of the CWR and specifically, the members of the Land Use Subcommittee who helped with various stages of this effort including: Devin Duval, Jessica Foulis, Cinnamon Levi-Flinn, Rick Pylman, Kristen Bertuglia, Kim Langmaid, Maureen Mulcahy, and Katherine King. Thanks also to Eagle County for funding the telephone and nonresponse surveys. We would also like to acknowledge Oliver Skelly and Renata Araujo for helping implement the Spanish translated questionnaire at in-person, Eagle Valley Outdoor Movement events.



Executive Summary

Background

Land development and increased demand for outdoor recreational opportunities continue to impact wildlife habitat and are placing increased pressure on local wildlife populations. Land managers and other decision makers in Eagle County are interested in finding ways to incorporate wildlife habitat conservation into land use decisions and policies that are consistent with the desires of the county's residents. To do so, we developed a county level survey in collaboration with members of the Land Use Subcommittee to examine Eagle County residents' attitudes about wildlife, outdoor recreation, and land use planning. These data are critical to assuring that land use decisions reflect the needs, interests, preferences, and recreation opportunities that Eagle County residents desire. The Eagle County Community Wildlife Roundtable (CWR) plans to share these data with interested stakeholders and the public so that they may serve as one of many different tools to help guide land use policy development and decision making processes. This survey also addresses the objectives and goals the Land Use Planning Subcommittee established as priorities for their role within the larger CWR.

Goal and Objectives

The overarching goal of this effort was to incorporate social science data about Eagle County residents' attitudes about wildlife, wildlife habitat and other land use preferences (e.g., outdoor recreation, land use development, etc.) into local planning efforts and policy decisions. To do so, we developed three specific objectives which guided this inquiry:

- 1 To provide a detailed description of Eagle County residents' attitudes about wildlife and wildlife habitat; identify their knowledge, concerns, and preferences regarding land use processes; and to identify their engagement and communication preferences regarding land use decision making.
- 2 To examine the relationship between residents' attitudes and preferences for wildlife conservation, recreation opportunities, and land use decisions.
- 3 To identify residents' desires to incorporate wildlife and wildlife habitat considerations into county-wide land use priorities and projects.

Methods

In order to collect responses from Eagle County residents we developed and implemented a standard mail survey instrument. We mailed the questionnaire and a cover letter explaining the purpose of this study to 3,000 randomly selected Eagle County residents. Everyone in the sample was also provided with a unique link allowing them to participate online if they chose to do so. The sample was developed using the Eagle County Voter Registration Database and the questionnaire was implemented over a 10 week period which included multiple contacts (e.g., cover letter, questionnaire, follow-up/reminder postcards). Data were collected between September and November, 2021.

In addition to the mail survey, a telephone survey was conducted using a condensed version of the mail questionnaire. This version contained approximately 13 questions from the mail questionnaire that the Land Use Subcommittee deemed most critical. A few questions were slightly modified to accommodate compatibility in data collection methodology. A call center was contracted to carry out the survey using the same sample as the mail survey. The goal of this effort was to collect data from approximately 300 total responses. The phone survey was implemented in October 2021.

A copy of the questionnaire was also made available for members of the public - who were not selected to participate in either the mail or telephone survey - through the Vail Daily. A weblink, separate from the one

included in the mail survey, was provided through both online and print media. Additionally, Spanish versions of the questionnaire were distributed by the Eagle Valley Outdoor Movement at two events throughout the month of October. Individuals and families attending these events were provided with a hard copy of the questionnaire (including a third, unique weblink) which they could mail back after completing it. Postage was paid for all questionnaires. For purposes of this study and subsequently, for this report, we included results from the mail/online and telephone surveys. Results from the three respondents who completed the questionnaire in Spanish as well as those from the 86 individuals who participated using the online comment form will be analyzed and shared with the CWR at a later date.

Key Findings

■ Response rate (mail survey results are presented below unless otherwise noted)

- ▶ In total, 863 residents completed the mail survey resulting in a 31% response rate.
 - 73% participated via standard mail; 27% participated online.
 - 50 telephone calls to nonrespondents were completed.
- ▶ 408 residents responded to the telephone survey.
 - In total, 30,090 residents were contacted via phone, email or text message during the three day period.
- ▶ 86 residents completed the questionnaire via the public comment form link (*these were not included in additional analyses*).
- ▶ 32 questionnaires that were translated in Spanish were distributed at two in-person events. In total, three residents completed and returned the questionnaire (*these were not included in additional analyses*).

■ Sociodemographics

- ▶ About 66% of mail survey respondents have lived in Eagle County for 20 or more years.
- ▶ The majority (84%) of respondents identified as White/Caucasian and slightly less than half (47%) of respondents identified as female.
- ▶ A majority of respondents (85%) (excluding seasonal residents) own their homes. More than half (58%) of mail survey respondents reported having a household income above \$100,000 (compared to 46% of telephone respondents). The median household income in Colorado is approximately \$85,000.00.

■ Environmental concerns

- ▶ Both mail and telephone respondents expressed concerns that align with those of other Coloradans (see Colorado College 2020 statewide survey). The top three environmental concerns of mail survey respondents were: (1) wildfires, (2) drought and water levels, and (3) climate change. Telephone respondents identified (1) water pollution, (2) recreation development, and (3) wildfires as their top three concerns.

■ Attitudes toward wildlife

- ▶ A majority of Eagle County residents have positive attitudes toward wildlife. This finding spanned both mail and telephone survey results.
 - A majority (84%) of mail and telephone (82%) survey respondents indicated that they enjoy wildlife and *do not* worry about the problems they may cause. Only 15% of respondents from both surveys enjoy wildlife, but worry about problems they may cause.

- ▶ Similarly, sustaining wildlife populations is important to Eagle County residents.
 - All (100%) mail survey respondents indicated that sustaining wildlife populations in Eagle County over time was somewhat, moderately or very important to them. To note: it was “very important” to 84% of respondents and no one selected “not at all important.”
 - Similarly, 98% of telephone survey respondents identified sustaining wildlife as somewhat, moderately or very important (84% of which indicated “very important”).
- ▶ Respondents want the county to prioritize the protection of critical wildlife habitat.
 - The majority of mail survey respondents believed Eagle County currently considers habitat protection as a moderate- (48%) or low-level (34%) priority. On the contrary, the vast majority of respondents suggested that the county should place a high (73%) or moderate (26%) level priority on protecting critical wildlife habitat.
 - Nearly all (94%) telephone survey respondents believed that protecting wildlife habitat should be a moderate-to-high level priority.
- ▶ A majority of Eagle County residents are concerned about the future of wildlife habitat in Eagle County.
 - Specifically, about two-thirds (64%) strongly agreed with the statement “*I am concerned that important wildlife habitat in Eagle County may be converted for residential or commercial development in the near future.*”
 - Another 20% somewhat agreed with this statement.

■ ***Land use preferences and tradeoffs***

- ▶ The majority of Eagle County residents would like to see open spaces be a top priority for the county.
 - More than three-quarters (77%) of respondents believed that acquiring, maintaining, and preserving open space over the next 5-10 years should be a high priority and 18% would prefer it be a medium-level priority.
- ▶ Overall, respondents prefer seeing wildlife habitat protected even if that limits future land use development projects or outdoor recreation opportunities.
 - About 82% of mail and 75% of telephone survey respondents agreed with statements prioritizing the protection of wildlife habitat even if doing so restricts future land use development projects.
 - More than three-quarters (77%) of mail respondents agreed that wildlife habitat should be protected even if doing so limited future outdoor recreation opportunities compared to 73% of telephone respondents.
 - Similarly, the majority of mail survey respondents (77%) would prefer more outdoor recreation opportunities even if doing so limits future development projects. Fewer (64%) telephone respondents agreed with this statement.

■ ***Outdoor recreation participation***

- ▶ Eagle County residents recreate outside frequently.

- About 84% of respondents recreate at least two times per week with 46% of those individuals indicating they recreate four or more times per week.
- ▶ Walking/dog walking (83%), hiking/backpacking (79%) and skiing/snowboarding (75%) were the top three activities based on participation.
 - Snowshoeing/cross country skiing (68%) and camping (65%) rounded out the top five.
 - About 25% of respondents indicated hiking/backpacking as the #1 activity they enjoy the most in Eagle County.

■ *Motivations*

- ▶ Eagle County residents recreate outdoors for a variety of reasons. The three most important drivers included: (1) to exercise/improve physical health, (2) to engage in one's favorite recreational activity, and (3) to enjoy or spend time in nature (83% of respondents selected "very important" for all three)

■ *Life in Eagle County*

- ▶ The majority (87%) of residents were satisfied with their quality of life in Eagle County.
 - 77% were very-extremely satisfied.
- ▶ Public lands in Eagle County are very important to residents. About 96% of respondents somewhat-to-strongly agreed that public lands enhance their quality of life.
- ▶ Residents appear to be interested in local land use development projects. Specifically, about two-thirds (65%) of respondents were very or extremely interested in them in Eagle County and another 30% were somewhat interested in these types of projects.

■ *Civic engagement*

- ▶ Overall, respondents were more likely to engage in civic activities that required less of a time commitment. Specifically, they were somewhat-to-very likely to sign a local petition in favor or against a land use project (73%) than they were to engage in other activities related to said project, such as attending a local meeting (45%), providing a formal public comment online or in-person (40%) or contacting a local official (38%).

■ *Communication preferences*

- ▶ Eagle County residents currently receive information about local land use development projects of interest to them through a variety of mechanisms.
 - Most (84%) obtain information through local newspapers and/or their affiliated websites, via word-of-mouth (65%), or from social media (33%).

Summary

Overall, our study provides evidence about how important wildlife, wildlife habitat, and outdoor recreation are to Eagle County, Colorado residents. The vast majority of residents hold positive attitudes about wildlife and want to see wildlife populations and corresponding habitat sustained over time. Similar sentiments were expressed about respondents' land use preferences and the tradeoffs that often arise as a result of land use decisions. Residents overwhelmingly articulated an interest in prioritizing wildlife habitat even if doing so might limit future land use development projects and to a lesser degree, outdoor recreation opportunities. Residents' willingness to forgo future recreation opportunities provides additional nuance for decision makers who are often tasked with contemplating potential land use projects. However, outdoor recreation is critically important to residents. They recreate outside frequently, often being motivated by wanting to spend time in nature, maintain (or improve) physical health and to enjoy walking, hiking, skiing, and other activities. Outdoor recreation — including access to public lands — can and will continue to play a vital role in residents' high quality of life, yet our results indicate that when forced to choose between potentially competing interests, residents will choose wildlife habitat protection above and beyond other attributes.

We also learned from this study that residents would prefer wildlife habitat protection become a higher priority of Eagle County versus what they currently perceive it to be, which is a low- to moderate-level priority. This finding highlights an inherent disconnect between residents' land use preferences and their perceptions about current county land prioritization policies. Specifically, it illustrates that most residents do not believe their values and attitudes are being accurately reflected in local land use decision making processes. However, many residents were reluctant to engage in land use decision making processes preferring to share their perspectives in ways that require less commitment in terms of their time and overall effort (e.g., signing a local petition). Thus, garnering public interest in and support for projects that might negatively affect wildlife habitat may represent a substantive hurdle. That being said, our survey results also indicated that residents were



(Photo credit: Rick Spitzer)

more likely to stay informed about these efforts through local newspapers and local (news) websites. Word of mouth, or personal social networks, were also ranked highly as a way to learn about county-wide projects. We recommend local governments encourage participation in decision making processes (e.g., public meetings, petitions) by engaging with their respective constituents using their preferred communication methods. The CWR can also assist in these efforts by making these data readily available for interested stakeholders. The CWR is also well positioned to share information via word of mouth (an effective mode of communicating news in Eagle County) given the wide range of stakeholders and interests represented in the group.

Table of Contents

Acknowledgementsii
Executive Summary	1
Introduction	8
Background	8
Core Constructs	9
Wildlife Attitudes	9
Outdoor Recreation Participation and Preferences	10
Land Use Preferences	10
Methods	11
Study Site	11
Sampling Design	11
Survey Design and Implementation (data collection method)	12
Survey Measures	15
<i>Perceptions about the Environment, Wildlife and Wildlife Habitat</i>	15
<i>Outdoor Recreation Activities and Interests</i>	15
<i>Quality of Life and Use of Public Land</i>	15
<i>Land Use Preferences</i>	15
Analysis	16
Results	16
Response Rates and Respondent Characteristics	16
Attitudes about the Environment, Wildlife, and Wildlife Habitat	16
Land Use Preferences and Tradeoffs	19
Avidly and Actively Recreating Outside in Eagle County	20
Staying Satisfied in Eagle County	22
Calling on County Citizens: Civic Engagement	24
How County Residents Receive Communication	24
Living in Eagle County for a Long Time	25
High Prevalence of Home Ownership	26
Sociodemographics	27
Discussion	29
Conclusion	32
Works Cited	33
Appendices	36
Mail Survey Statistical Summary	36

List of Figures

Figure 1: Environmental Concerns (Mail).....	17
Figure 2: Environmental Concerns (Phone)	17
Figure 3. Perception of County’s Prioritization of Wildlife Habitat.....	18
Figure 4. Concern About Wildlife Habitat.	19
Figure 5. #1 Outdoor Activities.....	21
Figure 6. Psychological Motivations (Reasons to Recreate Outdoors)	22
Figure 7. Quality of Life in Eagle County.	23
Figure 8. Contribution of Public Lands to Eagle County.	23
Figure 9. Likelihood of Engaging in Civic Activities	24
Figure 10. How Eagle County Residents Receive Information.....	25
Figure 11. Type of Residence	26
Figure 12. Age of Respondents Distribution	27
Figure 13. Gender Identification	28
Figure 14. Household Income.....	29

List of Tables

Table 1. Participating Stakeholders of the CWR.....	8
Table 2. Advantages and Disadvantages Associated with Survey Methodologies.	13
Table 3. Sample Stratification and Development.....	12
Table 4. Land Use Preferences.....	20
Table 5. Top 10 Activities Organized by Percentage.....	21
Table 6. Respondents Length of Time Living in Eagle County.....	25
Table 7. Comparing Respondents’ Residence Locations with Percent of Questionnaires Mailed to Residences Connected with Eagle County Towns	26
Table 8. Ages of Respondents.....	27
Table 9. Race and Ethnicity Percentages of Respondents, Eagle County and the state of Colorado.....	28

Introduction

Background

Recognizing the Need for Community Collaborative Conservation

In 2019 several Eagle County community members were becoming increasingly concerned with what they perceived to be the encroachment and loss of wildlife habitat (and habitat connectivity) as well as an increase in outdoor recreation. Additionally, they were apprehensive about the effectiveness of the seemingly disparate and disjointed efforts to mitigate the loss of habitat. Seeking a collaborative solution, these individuals began to leverage local resources by connecting organizations already working to conserve critical wildlife habitat. This led to the establishment of the Eagle County Community Wildlife Roundtable (CWR) in 2020. The CWR’s vision is for the community to embrace wildlife populations and take action to protect and enhance wildlife habitat for future generations (CWR 2019).

Table 1. Participating Stakeholders of the CWR

Interest Area	Stakeholder Affiliation/Organization
Agriculture	Soil Conservation District/Gypsum; Local Ranch Owner
Anglers /Aquatics	Trout Unlimited
Business/Land Development	Red Mountain Development Group; Pylman & Associates, Inc.; Vail Valley Partnership
Citizen Advocacy	Citizen at Large
Education/Sustainability	Walking Mountains Science Center; Eagle Valley Outdoor Movement
Facilitation/Coordination	National Forest Foundation*
Guides & Outfitters	Bull Basin Outfitters
Federal Government	Bureau of Land Management*; USDA Forest Service, White River National Forest*
State Government	Colorado Parks and Wildlife*
Land Trust	Eagle Valley Land Trust
Landowner	Private rancher
Local Government - Eagle County Elected Official	Eagle County elected officials & staff; Eagle County Open Space*; Town of Avon & staff*; Basalt Town Council/Pitkin County Open Space; Town of Gypsum; Town of Eagle/Trails & Open Space*; Town of Minturn*; Town of Vail Elected official & staff*;
Philanthropy	Eagle Valley Community Foundation
Public Lands & Wilderness*	Wilderness Workshop (& alternate)
Recreation - Motorized	Wildridge Trail Coalition
Recreation - Winter Motorized	Holy Cross Powder Hounds
Recreation - Equestrian	Mountain Valley Horse Rescue
Recreation - Non-Motorized	Vail Valley Mountain Trails Association
Recreation - Outreach	Eagle Valley Outdoor Movement
Ski Resorts	Vail Resorts
Sports Person	Local Sports Person
Transportation	Colorado Department of Transportation
Watershed Health	Eagle River Watershed Council

*Denotes an agency/organization with multiple members participating in the Roundtable.

The CWR states its purpose as to “leverage diverse values, creativity, and resources to move toward positive action and long-term solutions for wildlife populations and communities in Eagle County.” (CWR 2019). Approximately 50 individuals from diverse organizations and stakeholder interests (Table 1) participate voluntarily and typically serve on at least one of five different Subcommittees. These include the: Organizing Subcommittee (addresses structural challenges and issues within the CWR); Recreation Subcommittee (identifies best practices for balancing recreation with wildlife habitat protection); Education/Outreach and Human/Wildlife Management Committee (engages the public about wildlife issues via education and outreach materials and methods); Habitat Management Committee (assesses, identifies, and establishes ways to improve wildlife habitat in Eagle County), and; Land Use Planning Committee (encourages conscientious land use decisions by engaging decision-makers via cooperative and creative problem solving). These groups work collaboratively to advance the CWR’s mission and typically meet once per month to provide updates and discuss on-going needs.

Given the mission of the CWR and the diversity of stakeholder interests it represents, the group wanted to learn what is important to Eagle County residents. Specifically, they were interested in surveying residents to understand their preferences for, and attitudes about, wildlife/habitat, outdoor recreation, and other types of land use in Eagle County (e.g., commercial development). These three attributes are inextricably linked and can be beneficial – when land use planners carefully consider the impacts of each – or they can be mutually exclusive – where one attribute is prioritized over others (Miller et al. 2020). Thus, understanding the degree to which these attributes are important to residents will assist policy makers and land managers to make decisions that align with residents’ interests and priorities as well as those of the County. Three objectives guided this study:

- ① To provide a detailed description of Eagle County residents’ attitudes about wildlife and wildlife habitat; identify their knowledge, concerns, and preferences regarding land use processes; and to identify their engagement and communication preferences regarding land use decision making.
- ② To examine the relationship between residents’ attitude and preferences for wildlife conservation, recreation opportunities, and land use decisions.
- ③ To identify residents’ desires to incorporate wildlife and wildlife habitat considerations into county-wide land use priorities and projects.

Core Constructs

Wildlife Attitudes

In order to gauge residents’ interest in and concern about wildlife and wildlife habitat we focused on measuring respondents’ attitudes. An attitude can be defined as “an association between a given object and a given evaluative category” (Fazio et al. 1982, p. XX). In this way, an attitude represents a positive or negative evaluation or assessment that people make about something. There are several factors that influence people’s attitudes including values, beliefs, social norms, and overall familiarity (e.g., direct or indirect experience), knowledge about or awareness of the attitude object (Fishbein and Ajzen 2009). Attitudes are often further divided into implicit and explicit outcome evaluations (Wilson and Schooler 2000).

Implicit attitudes represent evaluations that people activate automatically without effort or strenuous cognitive processes. For example, a person may gain an aversion to topics or scenes centered around harming the environment (e.g., water pollution, deforestation) due to the negative feelings it can generate (Greenwald and Banaji 1995). If that same person enjoys outdoor activities, such as hiking, then they may gravitate towards people or events related to that activity as they associate it with positive feelings, such as happiness or excitement.

Explicit attitudes are evaluative judgments based on deductive reasoning derived from any kind of information that is considered relevant for a given decision (Gawronski and Bodenhausen 2006). In a new scenario a person is presented with a referendum to expand the trail system in their local park. Believing that there are too few trails already while also being an avid hiker, they may vote 'yes' for the project. This is an example of an explicit attitude as the person in the scenario made a conscious decision based on prior information and experience.

For purposes of this study, we chose to measure explicit attitudes because they represent self-reported evaluations. We did so by drawing upon previous research (FitzGibbon and Jones 2006; Gawronski and Bodenhausen 2006; Gibson et al. 2005; Green et al. 2010; Thompson 2013). Similarly, we drew upon theoretically robust and empirically supported scales including but not limited to: Thurstone's Equal-Appearing Intervals Scale, Likert's Method of Summated Ratings and Guttman's Cumulative Scaling Method (Manfredo 2008).

Gathering data on attitudes toward wildlife provides important indicators of residents' concern about and interest in wildlife, as well as an individual's willingness to prioritize or support/oppose wildlife conservation over other considerations. Additional considerations that can influence these evaluations include, but are not limited to, residents': outdoor recreation preferences, knowledge about and awareness of county-level land use regulations, and potential impacts on or changes to one's community (or way of life).

Outdoor Recreation Participation and Preferences

Outdoor recreation is critical to Coloradans way of life and to Colorado's economy. In 2018 Colorado Parks and Wildlife conducted a statewide survey to inform the Statewide Comprehensive Outdoor Recreation Plan (SCORP) and found that 92% of Coloradans participate in some form of outdoor recreation at least once every few weeks and nearly 70% recreate between one and four times per week (Colorado Parks and Wildlife 2020). The outdoor recreation industry generates approximately \$62 billion in revenue and

accounts for 511,000 jobs in Colorado (Colorado Parks and Wildlife 2019). Eagle County, Colorado, has a large and thriving outdoor recreation industry. For example, the travel and tourism industry accounted for 40% of private employment in Eagle County in 2019. During that time, about 23% of workers were employed by ski resorts, campgrounds, or other businesses directly tied to the outdoor recreation industry (Headwaters Economics 2019).

Land Use Preferences

Colorado ranks as the seventh fastest growing state in the country and is projected to reach a population of 8.1 million people by 2050 (Colorado Parks and Wildlife 2020). Land managers must constantly strive to find a balance between accommodating the outdoor recreation interests of a growing population and conserving critical wildlife habitat. To that end, many municipalities and counties across Colorado have developed strategic action plans to acquire, maintain, and preserve open spaces for wildlife and outdoor recreation. A 2015 survey conducted by the Colorado Department of Local Affairs found that fourteen counties had adopted such land use plans, specifically developed for parks, trails, and open spaces (Colorado Department of Local Affairs 2015). These plans align with Coloradans' interests as well. When asked what natural resource-based priorities Coloradans want CPW to prioritize, most indicated land conservation, environmental protection, and preserving natural areas as the most important (Colorado Parks and Wildlife 2020). Additionally, 72% of survey respondents identified "protecting wilderness/open lands" as a high or essential priority (Colorado Parks and Wildlife 2020). Providing open spaces for residents provides personal enjoyment in the form of recreational opportunities, scenic views, etc. but they also enhance (or sustain) critical ecosystem services including biodiversity, freshwater, and climate regulation (Geoghegan 2001; Millennium Ecosystem Assessment 2005).

Eagle County is one of fourteen counties in Colorado with a strategic plan that incorporates open space and recreation planning. Plan implementation and oversight relating to Open Space and trails are provided by the Eagle County Open Space Program

which was established in 2003 (Eagle County Open Space 2020). The purpose of the program is to acquire, manage, maintain, monitor and ultimately, preserve open space in the county. In addition to the county's open space, the landscape of Eagle County also includes state and federal lands which are open to the public for recreation and also provide essential habitat for wildlife. Approximately 848,792 acres of land in Eagle County are owned and managed by federal agencies, such as the U.S. Forest Service and Bureau of Land Management. About 11,000 acres are owned by the state of Colorado (Headwaters Economics 2019).

Similar to many counties in the Continental Western United States, a map of Eagle County looks like a mosaic of land representing different types of land ownership (e.g., federal, state, county, private, etc.). From county and municipal zoning regulations to federal environmental laws, land managers working within the County must navigate a complex system of codes, laws, restrictions, policies and land use regulations. This system is overseen by a suite of different agencies including but not limited to: the Bureau of Land Management, United States Department of Agriculture Forest Service, Eagle County, Eagle County municipalities, etc. (Eagle County Land Use 2022). Additionally, Colorado Parks and Wildlife is responsible for the stewardship and management of wildlife resources in the county. As a result, we attempted to simplify the spatial scale and focused on "Eagle County" for this inquiry. We also did this because our sample consisted of Eagle County residents who - we hypothesized - would be more familiar with this level of oversight than other state and federal management agencies. In reality, land managers in Eagle County face the challenging task of coordinating the aforementioned complexities to achieve sustainable land use decisions.

Methods

Study Site

Approximately 55,100 people reside in Eagle County which is located in Central-Northwest Colorado and covers nearly 1,685 square miles. From 2010 to 2019, Eagle County's population increased nearly 6% while the overall Colorado population grew approximately 15%. A majority of residents live in urban areas including but not limited to: Edwards, Vail, Eagle, Gypsum, etc. (U.S. Census Bureau, 2021). About 80% of the land in Eagle County is federally or state owned (e.g., USFS, BLM, and state of Colorado) while the remaining 20% is primarily privately owned or is Open Space lands managed by the county and other local municipalities (Eagle County Community GIS Department 2022). This information suggests that intelligent city planning and land use design will be essential for balancing the interests of people and wildlife.

Sampling Design

The Eagle County voter registration list, which included information from 36,867 residents (approximately 67% of the total population of Eagle County) served as the sampling frame for this effort. In order to ensure adequate coverage from residents in each of the eight towns and unincorporated areas in Eagle County, we developed a stratified random sample of $n = 3,000$ residents. Specifically, we stratified the sample based on the population proportion in each of the following towns: Edwards, Avon, Eagle, Gypsum, Vail, Basalt, Minturn, and Red Cliff. Residents living in an unincorporated municipality were placed in their own strata. First, we calculated the population proportion of each town. We did this by dividing the town's population by the total population of Eagle County. Next, we calculated the number of people to include in the sample by multiplying the population proportion for each town by our sample size (3,000) (Table 3). We excluded seasonal residents and anyone under the age of 18 years old from the sample.

Table 3. Sample stratification and development.

Town	Population	Proportion	Number of residents to include
Eagle	6,151	0.183535239	550
Vail	6,137	0.1831175031	549
Avon	6,074	0.1812376917	544
Edwards*	5,651	0.1686161007	506
Gypsum	4,672	0.139404428	418
Basalt	2,888	0.08617294265	259
Minturn	852	0.02542221161	76
Wolcott*	310	0.009249865728	28
El Jebel*	264	0.007877305007	24
Cordillera*	167	0.004982992182	15
Red Cliff	162	0.0048338008	15
Burns*	69	0.002058841081	6
McCoy*	55	0.00164110521	5
Bond*	54	0.001611266933	5
Dotsero*	8	0.0002387062123	1
Total	33,514		3,000

*Unincorporated municipality (927 total).

Survey Design and Implementation (data collection method)

Social science surveys provide a robust opportunity to learn from larger segments of a given population. However, even the most robust and carefully constructed surveys can introduce bias and negatively impact results. The benefits and drawbacks from standard mail, telephone, and online surveys are summarized below (Table 2).



(Photo credit: Rick Spitzer)

Table 2. Advantages and disadvantages associated with survey methodologies.

Survey method	Advantages	Disadvantages
Mail surveys		
(Dillman et al. 2014; Edwards et al. 2013; Smyth et al. 2010)	<ul style="list-style-type: none"> ■ Typically yield highest response rates across disciplines/fields. ■ Address Based Samples provide most robust sampling coverage. ■ Easily combined with online techniques. ■ Can revisit survey/respond at earliest convenience. 	<ul style="list-style-type: none"> ■ Can be costly: printing, postage, data entry, and purchasing samples from 3rd parties. ■ Time consuming: often takes months from start to finish; recent delays with U.S. postal service as a result of Covid-19 pandemic. ■ Questions relying on skip logic may be misunderstood or difficult to follow. ■ Mail surveys may be discarded as junk mail.
Telephone surveys		
(Dillman et al. 2014)	<ul style="list-style-type: none"> ■ Efficient: Entire effort can be completed in days/weeks. ■ Brief surveys which can be completed by respondents quickly. ■ Can easily stratify sample (<i>if socio-demographic information is available</i>). ■ Trained callers can help explain questions and motivate people to participate. 	<ul style="list-style-type: none"> ■ Very costly. ■ More complex scales may confuse respondents, leading to response bias (e.g., social desirability bias). ■ Low efficiency in reaching large samples (i.e., low contact rate and corresponding response rate). ■ Costs increase as sample stratification and language-based criteria increase. ■ Questionnaires must be brief. ■ Requires trained/skilled interviewers. ■ Easy to “avoid” phone calls. ■ Can introduce coverage bias (<i>if emphasis is on cell phone v. land line and vice versa</i>). ■ Tools (or cell phone applications) capable of blocking unknown callers. ■ No call lists are increasingly used. ■ Cell phones are not associated with a residence, increasing complexity for geographic stratification. ■ Unexpected (“cold”) calls may result in more easily distracted respondents
Online surveys		
(Pew Research Center 2013; Duggan and Smith 2013; Rainie and Smith 2013)	<ul style="list-style-type: none"> ■ Most cost effective survey method. ■ Convenient: Ability to invite participants via text (SMS), email, QR code, etc. ■ Participation can occur using smartphones. 	<ul style="list-style-type: none"> ■ Can introduce sampling bias, disenfranchising individuals without computer/internet access (<i>however, 70% of US adults have broadband internet at home and 85% use the internet</i>). ■ High propensity for email addresses to be inactive or used infrequently. ■ Surveys can get flagged/marked as spam. ■ Costly and difficult to obtain email addresses ■ Can be issues of compatibility (computer v. smartphone).

Overall, research shows that mail surveys are still the preferred mode among different stakeholder groups. For example, a team of researchers conducted a mail survey of residents in two adjacent cities in Washington and Idaho using a mixed methods in 2007 and in 2010. Respondents were given the choice of answering by mail or web. Half answered by mail and only 13% answered by web (Smyth et al. 2010). Additionally, research conducted by one of the co-authors of this report suggests a similar preference. The majority of respondents continue to reply to standard mail questionnaires versus online options across a range of topics (Quartuch, 2020; Quartuch, 2019 [Appendix D]). Given the benefits and drawbacks of each survey method, we chose to implement a mixed methods approach that would address the concerns described above.

This study was designed using multiple data collection methods including a standard mail survey, a telephone survey, and other opportunities to learn from residents. We also included a unique weblink in the cover letter of the mail survey allowing people to participate online if they preferred. All survey instruments were collaboratively developed by the Land Use Planning Subcommittee with CSU graduate students and CPW's Human Dimensions Specialist taking the lead. The mail questionnaire included several key themes such as: attitudes toward wildlife, outdoor recreation preferences and avidity, and perceptions of risk about or concerns associated with land use decisions in Eagle County (see survey instrument, p. 36).

Survey implementation took place over a 2.5 month period from mid-September to end-October, 2021. First, we mailed a cover letter explaining the purpose of the study and the corresponding questionnaire to everyone in the sample the week of September 14-17. Next, we mailed a reminder/thank you postcard to everyone about three weeks later. Due to the on-going Covid-19 pandemic and challenges associated with standard mail and delivery services, we delayed printing/mailing the second round of questionnaires to allow for additional time for surveys to be mailed back. The second round of survey instruments were mailed on October 28.



(Photo credit: Rick Spitzer)

To help offset costs and increase the number of residents we could reach, the Eagle County Board of County Commissioners funded the telephone survey which was implemented via a private call center and overseen by a private consultant. Telephone surveys require brevity (typically about 5-10 minute conversations) and as a result, the research team (CSU/CPW), Land Use Planning Subcommittee, and consultant identified 13 of the most critical questions. Priority was given to questions that would serve as the most useful way to address the research questions and compare potential differences across data collection methods. The consultant also implemented an even shorter telephone survey to assess potential nonresponse bias from the mail survey effort. The telephone survey was administered October 25-27, 2021. In total, 408 Eagle County residents participated in the survey either through SMS/email invitations or from phone calls.

In order to ensure adequate representation of typically under-represented communities, we also translated the questionnaire in Spanish and administered it at several in-person Hispanic/Latino events. For example, Eagle Valley Land Trust staff attended two different events hosted by the Eagle Valley Outdoor Movement and handed out questionnaires to individuals interested in participating. Along with the questionnaire, postage paid envelopes were also provided.

Lastly, we created an opportunity to learn from any Eagle County resident interested in participating. To do this, we created a copy of the online survey (associated with the mail survey effort) and shared the

link publicly using the Vail Daily newspaper, radio, and word of mouth. Data obtained from the Spanish survey and public, online questionnaire were kept separate from the mail and telephone survey data.

Survey Measures (see Appendices for full survey instrument)

Perceptions about the Environment, Wildlife and Wildlife Habitat

It is important to measure attitudes about the environment and natural resources (e.g., wildlife habitat) because they, along with interests in outdoor recreation activities, influence the way people behave. People who hold positive attitudes about the environment at large often behave in environmentally responsible ways (Barker and Dawson 2012). Therefore, we asked six questions assessing residents' perceptions about the environment, wildlife and wildlife habitat. Specifically, we provided respondents with nine environmental concerns - including an additional option for them to write in any concerns not listed - and asked them to select what they believed to be the top three most pressing issues. Response options ranged from climate change and wildfires to residential development and drought. We measured residents' attitudes about wildlife by asking "Which of the following best describes your general attitude about wildlife in Eagle County?" The response options captured the extent to which people enjoy wildlife and what level of concern they may have about them. We also examined attitudes about wildlife by asking how important wildlife are to residents (using a 4-point, importance scale) and how much of a priority they feel Eagle County should place on protecting critical wildlife habitat (using a 4-point, priority scale). To identify potential concerns about the impact of residential/commercial development on wildlife habitat, we asked whether respondents disagreed or agreed with the following statement "I am concerned that important wildlife habitat in Eagle County may be converted for residential or commercial development in the near future." We used a 5-point, agreement scale from 1 (strongly disagree) to 5 (strongly agree).

Outdoor Recreation Activities and Interests

Outdoor recreation is important to both the economy of Eagle County and to the health and enjoyment

of its residents. Therefore we asked four questions examining residents' outdoor recreation activity interests and preferences. To gauge avidity, we asked how often respondents recreated outdoors in Eagle County over the past 12 months with 5 response options ranging from never to more than four times per week. We also asked which outdoor activities residents enjoyed in Eagle County using a list of 22 different options (e.g., fishing, camping, hiking, etc.). The next question asked which one activity respondents enjoyed doing the most in Eagle County. To understand what motivates residents to recreate outdoors, we asked how important 14 different reasons were in terms of driving or encouraging them to engage in outdoor activities.

Quality of Life and Use of Public Land

Understanding Eagle County residents' quality of life and how this relates to ongoing land use development, outdoor recreation and wildlife/habitat protection is important for land use planners and decision makers. Using a 7-point, Likert scale ranging from extremely dissatisfied to extremely satisfied, we asked residents how satisfied they are with the quality of life in their community. Because quality of life can mean different things to different people, we included the statement, "When considering your quality of life, you can think about if Eagle County is a good and safe place to live, to raise children, to work in, to grow old in, to appreciate the things you enjoy, to make friends, to feel valued and a part of the community?" We also asked residents about their level of agreement regarding public land use in Eagle County and how it affects their community using a 5-point, agreement scale.

Land Use Preferences

We measured residents' land use preferences by asking four questions spanning their perceptions about and interest in different management alternatives. The first examined residents' interest in local land development projects using a 4-point scale from 1 (not at all interested) to 4 (very interested). The second question examined how much of a priority Eagle County should place on acquiring, maintaining and preserving open space over the next 5-10 years. Next, we asked about the tradeoffs associated with land development projects in Eagle County using a 5-point,

agreement scale. Specifically, we asked if residents prefer land use development projects more than wildlife habitat and outdoor recreation opportunities. To note: we provided definitions for the terms “land use” and “development” at the outset of the survey. We also included a question assessing the likelihood that residents will engage in four civic activities (e.g., attending a local meeting, signing a petition, contacting local officials, etc.) specifically as they relate to local land use development projects using a 5-point, Likert scale from 1 (very unlikely) to 5 (very likely). The final question asked how residents currently receive information about local land use projects in Eagle County. This question will assist land managers, land use planners, and decision makers when considering how to communicate effectively with residents about on-going or future land use projects in ways that resonate with community members.

Analysis

We used IBM SPSS Statistics 27 to conduct all analyses. Throughout the remainder of this report we provided percentages, frequencies, means, and other descriptive statistics. Mail survey results are presented first followed by findings from telephone interviews where appropriate. We did not include responses from individuals who received the survey link via local newspaper, radio advertisement, or word of mouth or the responses we received from individuals who submitted questionnaires that they received at the Eagle Valley Outdoor Movement (EVOM) event. In total, 89 residents provided responses via the public, online survey and 3 residents from the EVOM events completed and returned their surveys.

We examined potential differences between mail survey respondents and nonrespondents using three key questions: (1) attitudes about wildlife (importance of wildlife populations), (2) preferences for sustaining wildlife populations in the county, and (3) recreation participation (frequency of engagement). Specifically, we conducted Chi-square statistical tests with a p-value of 0.05 to indicate statistical significance. Next we examined the effect size or strength of these relationships using Phi (ϕ), a product moment correlation similar to Pearson's r and interpreted in the same manner where 0.1 indicates a minimal

relationship, 0.3 a typical relationship, and 0.5 a substantial relationship (Vaske, 2008). We also conducted independent samples t-tests to examine potential differences between mail survey respondents and telephone interviewees. Effect size statistics were calculated using Cohen's d and Hedges g .

Results

Response rates and respondent characteristics

In total, 863 residents responded to the survey. After removing 295 individuals from the sample due to incorrect addresses, the adjusted response rate was 31%. The majority (73%) of respondents participated via standard mail versus online (27%). In total, 30,900 Eagle County residents were contacted by telephone (landlines and cell phones), email, and text messages. Four hundred eight residents participated in the telephone survey during the three 3 day period. Using this methodology, it is possible for an individual to receive multiple opportunities to participate but the call center was able to ensure that residents only responded using one method.

Statistically significant differences were not detected between mail survey respondents and nonrespondents regarding attitudes about wildlife and priority preferences. However, a greater percentage of nonrespondents (26%) recreate less frequently than respondents (13%). While statistically significant ($p \leq 0.020$), the effect size indicated a minimal relationship ($\phi = .078$).

Attitudes about the environment, wildlife, and wildlife habitat

In the last decade Colorado has experienced record-breaking wildfires, floods, and drought conditions (Gochis et al. 2015; Ingold 2020; Prentzel 2021). Given these recent events, it is somewhat unsurprising that mail survey respondents identified wildfires (64%), drought and water levels (58%), and climate change (50%) as environmental issues that they are most concerned about (Figure 1). Telephone survey respondents also included wildfires (41%) in their top three concerns but water pollution (53%) and recreation development (51%) rose to the top (Figure 2). In 2020 the Colorado College State of the Rockies

conducted its annual statewide Conservation in the West Survey, which included a question asking respondents to select their top three most important environmental problems. Respondents identified pollution (35%) climate change/global warming

(33%), and water related issues such as scarcity and drought (27%) (Colorado College 2020). Thus, results from both mail and telephone survey results provide support for those found in the statewide effort.

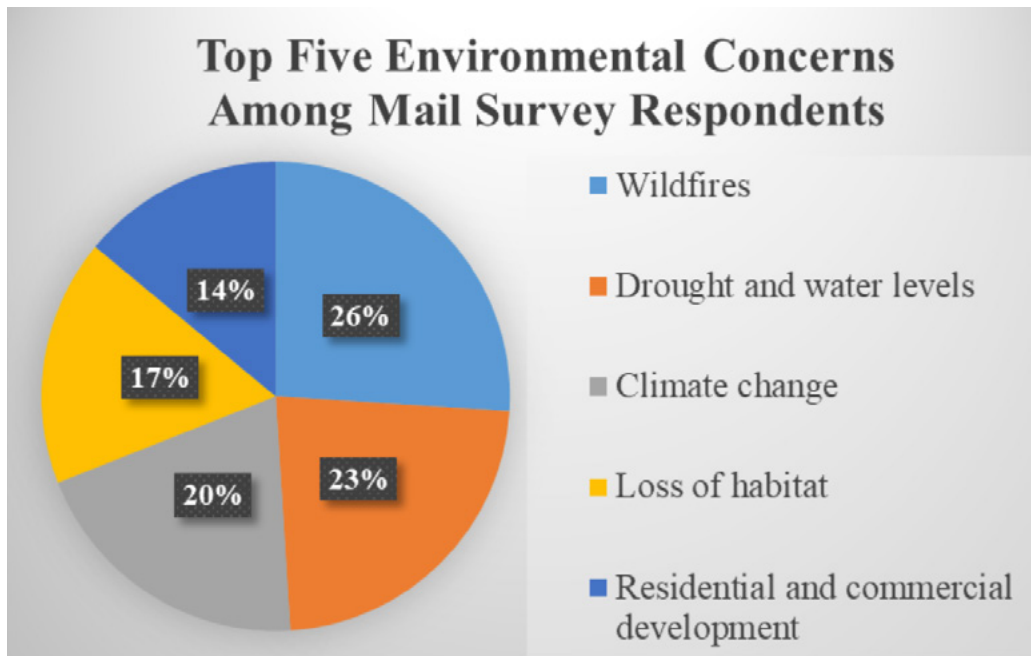


Figure 1: Environmental Concerns (mail survey).

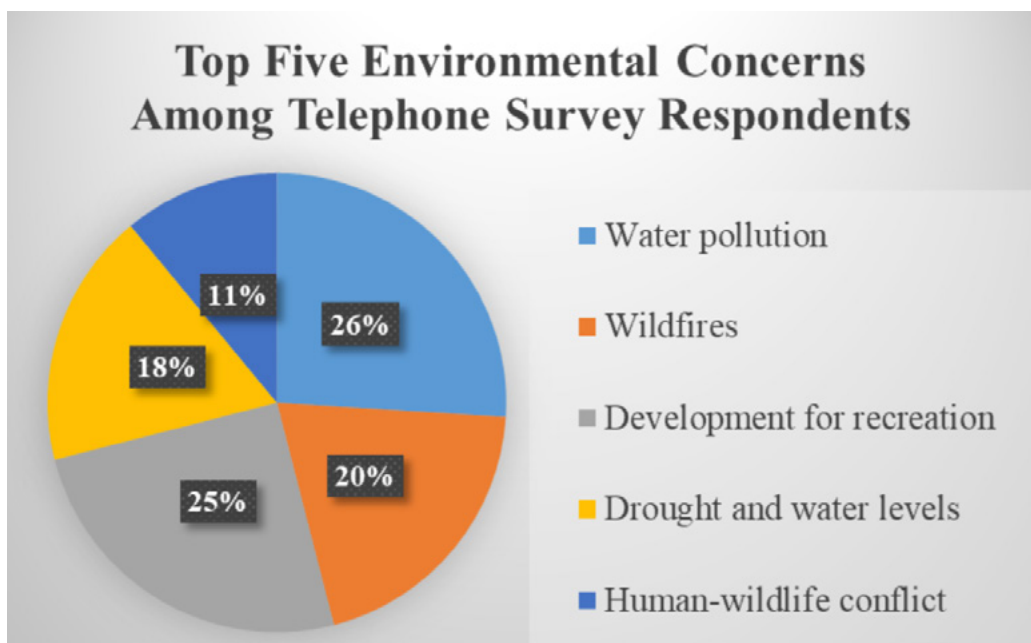


Figure 2: Environmental Concerns (telephone survey).

The majority of Eagle County residents have positive attitudes about wildlife as reflected in both the mail and telephone surveys. About 84% of mail survey respondents and 82% of telephone respondents indicated that they enjoy wildlife and are not worried about the problems they may cause. About 15% of both mail and telephone survey respondents enjoy wildlife but are worried about the problems they may cause. Examples of problems that wildlife may cause include, but are not limited to: property damage, human-bear conflict, wildlife grazing on landscaping, trash dependency, etc.

Sustaining wildlife populations in Eagle County is also of great importance to residents. All (100%) mail survey respondents indicated that doing so is a somewhat-to-very important issue. Only a small percentage of respondents (<1%) do not place any importance on sustaining wildlife populations. Similarly, 98% of telephone survey respondents identified sustaining wildlife populations as somewhat-to-very important.

Mail survey results indicated that residents did not believe Eagle County places a high priority on critical wildlife habitat and certainly not as

much as respondents would prefer they do. About 40% believed Eagle County only considers habitat protection to be a low priority or no priority at all. About 48% believed the county places a moderate amount of priority on protecting critical habitat. On the contrary, the majority of respondents suggested that habitat protection should be an important priority of Eagle County. Nearly three-quarters (73%) of residents believed that habitat protection should be a high priority and another 26% would prefer it to be a moderate level priority (Figure 3). Less than 1% think it should not be a priority for Eagle County.

We also assessed how concerned mail survey respondents were with wildlife habitat being converted to residential or commercial development. Specifically, we asked whether they disagreed or agreed with the statement: *“I am concerned that important wildlife habitat in Eagle County may be converted for residential or commercial development in the near future.”* The majority (84%) of respondents agreed that this was a concern of theirs and only 8% disagreed with this statement (Figure 4). About 8% were undecided about the current level of habitat protection in Eagle County.

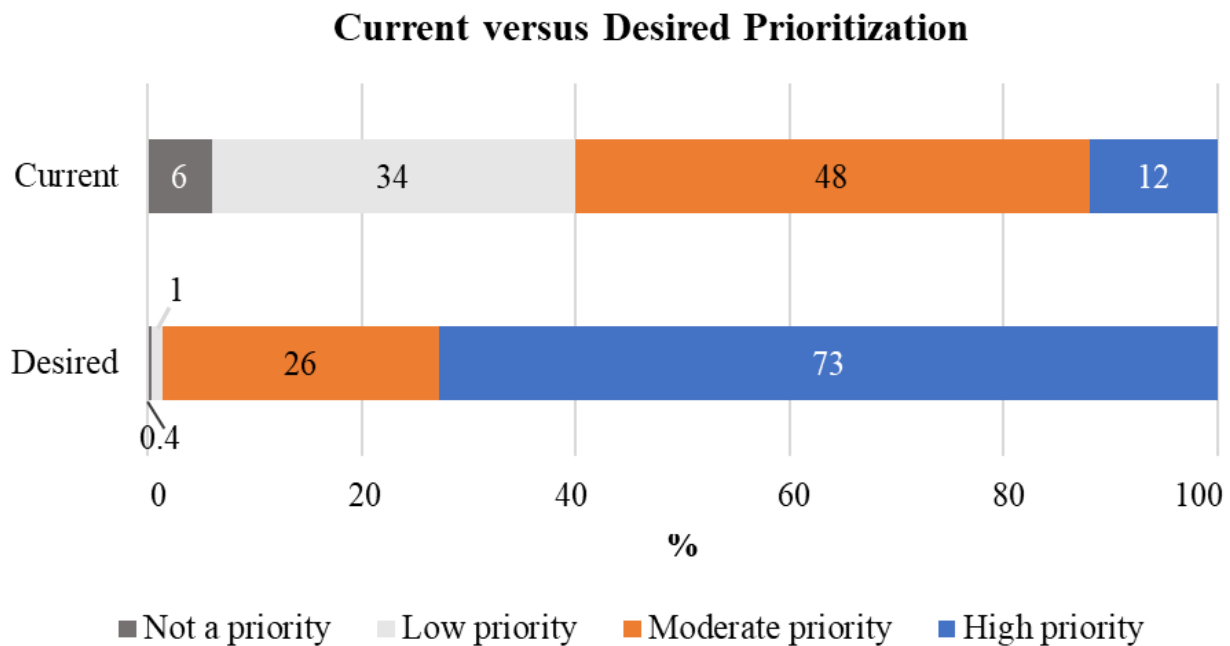


Figure 3. Current and desired prioritization of critical wildlife habitat in Eagle County (mail survey respondents).

Concern About Wildlife Habitat Being Converted For Development

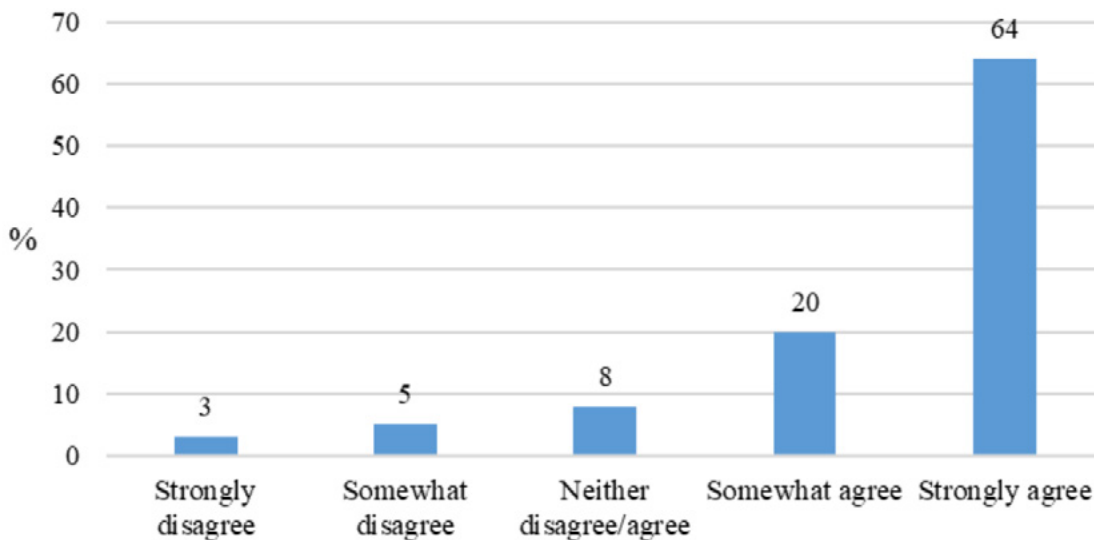


Figure 4. Concern About Wildlife Habitat.

Land use preferences and tradeoffs

Eagle County’s open spaces serve as habitat for wildlife and recreation opportunities for residents. Looking to the future, residents indicated they would like to see Eagle County continue acquiring, maintaining, and preserving open space over the next 5-10 years. The majority of respondents (77%) would like to see the county make open space one of their highest priorities and about 18% would prefer it be a moderate-level priority. Fewer than 5% believed it should be a low priority (3%) or not a priority at all (2%).

Respondents were also asked to weigh their preferences for three categories of land use: wildlife habitat, outdoor recreation, and land use development projects (commercial, urban, agricultural, etc.). The results suggested that respondents value wildlife habitat and outdoor recreation above land development projects. For example, the majority of respondents to both the mail and telephone surveys would prefer to see wildlife habitat protected even if doing so limited future development projects (82% and 75%, respectively). Similarly, nearly three-quarters

of mail and telephone survey respondents (77% and 73%, respectively) preferred outdoor recreation opportunities to development projects (Table 4). It is also important to note that the percentages of respondents from both the mail and telephone surveys who would prefer County decision makers find a balance between all three land uses was about the same (about two-thirds) (Table 4).

There were also several notable differences between mail and telephone survey respondents. For example, more telephone survey respondents (36%) than mail survey respondents (11%) would prefer future land use development projects over outdoor recreation opportunities. Similarly, though slightly less substantive, more telephone survey respondents (18%) than mail respondents (6%) would prefer land use development projects even if they would reduce wildlife habitat. While these differences were statistically significantly different across groups of respondents for both questions, the effect size statistics indicate minimal-to-typical relationships.

Table 4. Land use preferences. Only somewhat and strongly agree indicated below.

	% Mail survey	% Telephone survey	p-value	Cohen's <i>d</i> (type of relationship)
Wildlife				
Prefer protection of wildlife habitat even if doing so restricts future land use development projects	79	75	≤.001	0.226 (minimal relationship)
Prefer protection of wildlife habitat even if doing so limits future outdoor recreation opportunities	71	73	N/A	N/A
Outdoor Recreation				
Prefer more outdoor recreation opportunities even if it limits future land use development projects	73	64	≤.001	0.309 (minimal relationship)
Prefer more outdoor recreation opportunities even if it reduces wildlife habitat in Eagle County	8	11	N/A	N/A
Development projects				
Prefer new land use development projects even if it reduces wildlife habitat	6	18	≤.001	0.4190 (minimal-to-typical relationship)
Prefer new land use development projects even if it limits future outdoor recreation opportunities	11	36	≤.001	0.536 (typical relationship)
Balance interests				
Prefer decision makers find ways to balance new land use development projects, wildlife habitat, and future outdoor recreation opportunities equally	65	66	N/A	N/A

Avidly and Actively Recreating Outside in Eagle County

Overall, Eagle County residents recreate often. In fact, more than one-third (38%) of mail survey respondents recreate between 2-4 times per week and another 46% recreate more than four times per week. Similar results were detected via the telephone survey. About 31% recreate between 2-4 times per week and 46% recreate more than four times per week. These findings also illustrate how Eagle County residents recreate outdoors more frequently than most Coloradans. Results from the Statewide Comprehensive Outdoor Recreation Plan public survey suggest that on average, 31% of Coloradans recreate between 2-4 times per week and 14% recreate more than four times per week (Statewide Comprehensive Outdoor Recreation Plan 2019).

The top five most popular activities included: (1) walking/dog walking (83%), (2) hiking/backpacking (79%), (3) skiing/snowboarding (75%), snowshoeing/cross country skiing (68%), and camping (65%) (Table 5). Respondents were also asked to identify the one primary activity that they enjoy the most. One-quarter (25%) of respondents identified hiking/backpacking as their number one overall activity followed by skiing/snowboarding (21%), biking (11%), walking/dog walking (11%), and fishing (4%) (Figure 5).

Table 5. Top 10 activities organized by percentage.*

Top 10	Activity	% (frequencies in parentheses)
1	Walking/dog walking	83 (517)
2	Hiking/backpacking	79 (496)
3	Skiing/snowboarding	75 (472)
4	Snowshoeing/cross country skiing	68 (427)
5	Camping (tent, RV, cabin/yurt)	65 (410)
6	Biking (mountain/road)	62 (387)
7	Non-motorized (e.g., swimming, kayaking, rafting, paddle boarding)	61 (380)
8	Wildlife watching (excluding bird watching)	58 (364)
9	Picnicking/group picnic sites	39 (242)
10	Fishing	38 (239)

*Percentages rounded. Findings presented in Table 5 only represent results obtained from the mail survey and do not include online responses due to issues with the online survey platform.

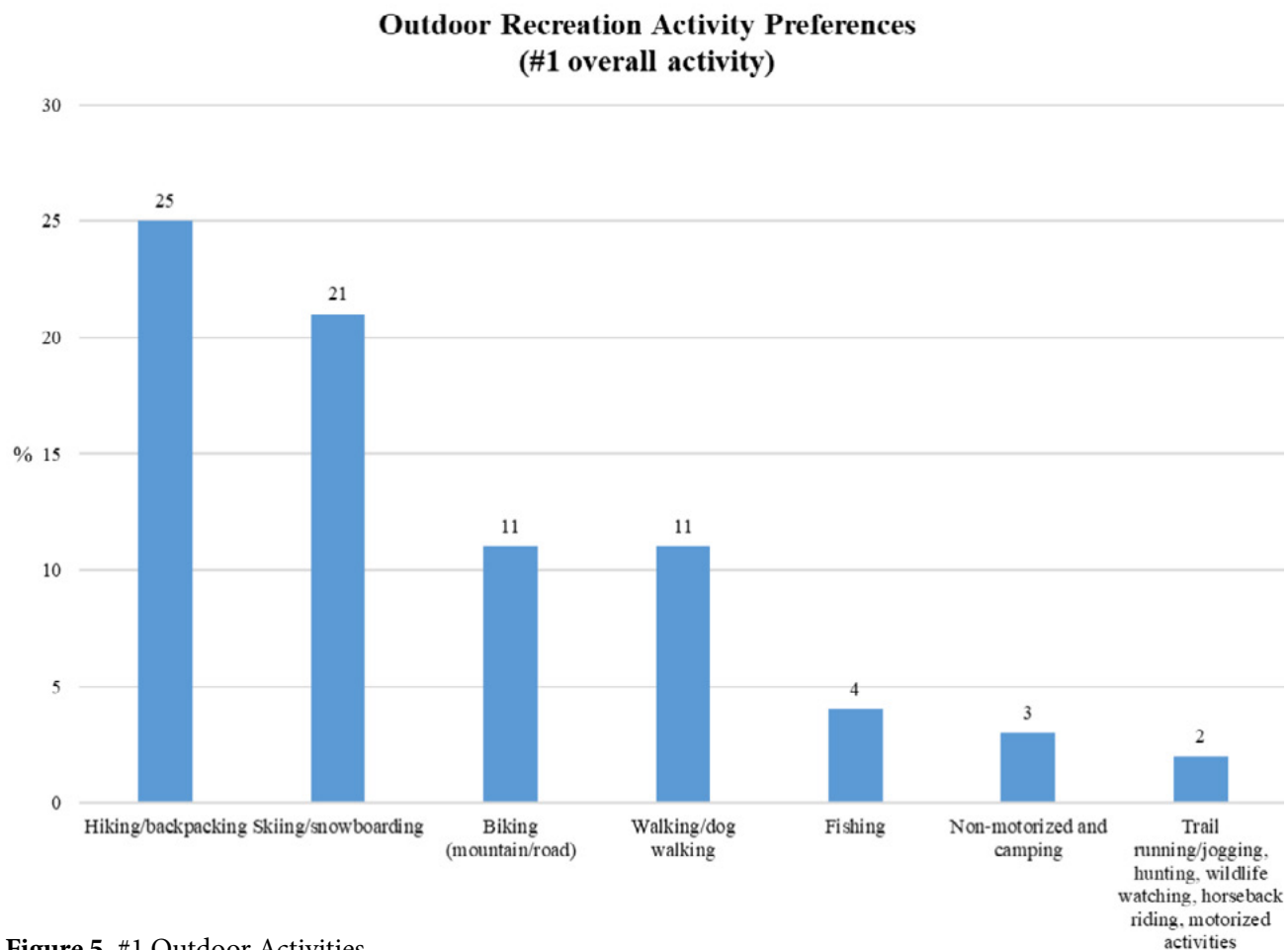


Figure 5. #1 Outdoor Activities.

*Additional activities including snowmobiling, bird watching, photography, climbing, and picnicking were listed as the #1 overall activity by 1% (or fewer) respondents.

We also asked respondents about their recreation-related motivations or the reasons why they recreate. Three motivations rose to the top with 83% of respondents indicating they were very important reasons why they recreate outdoors in Eagle County (Figure 6). They were to exercise/improve physical health, to engage in their favorite recreational activity, and to enjoy or spend time in nature. Additionally, three quarters indicated that relaxing and enjoying scenic views were very important motivations as well.

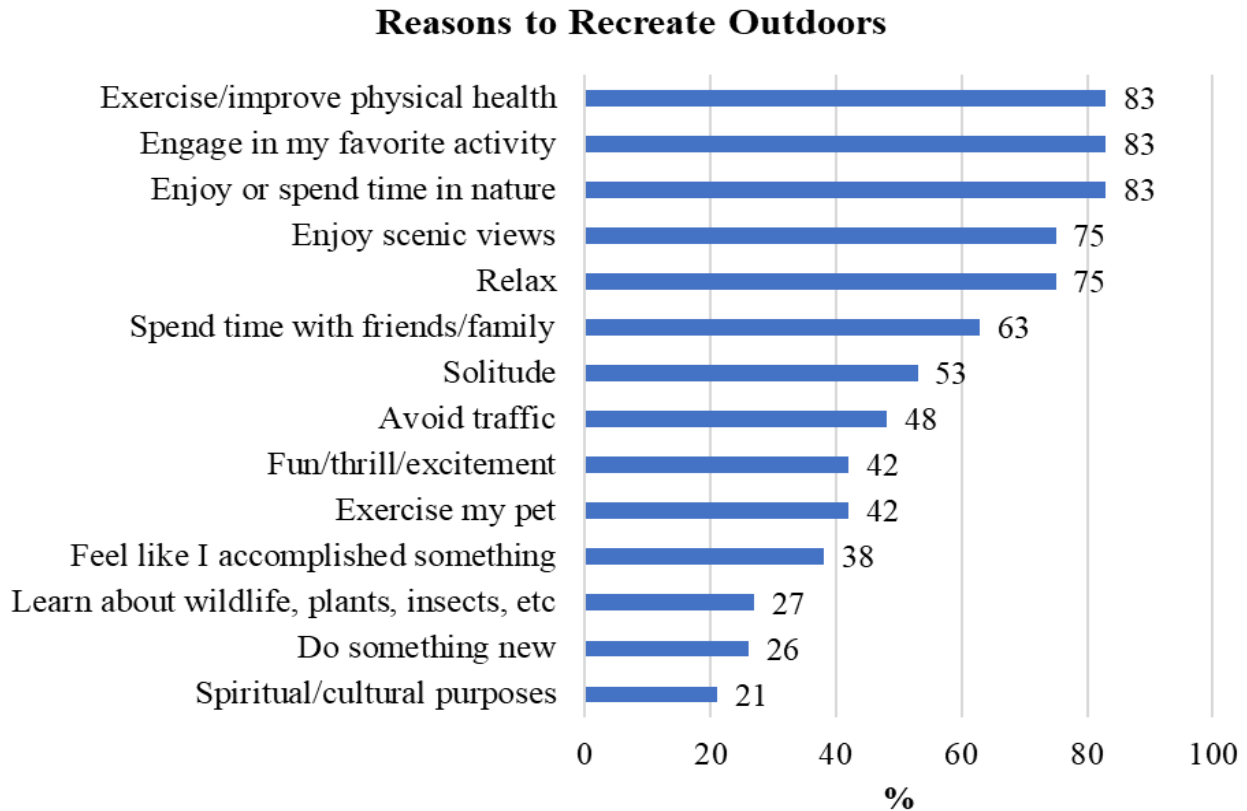


Figure 6. Psychological motivations (reasons to recreate outdoors).

Staying Satisfied in Eagle County

The vast majority (87%) of respondents indicated being satisfied with the quality of their lives in Eagle County (Figure 7). Importantly, about three-quarters (77%) were very-to-extremely satisfied. Findings also indicate that there is a positive relationship between respondents’ quality of life (QOL) and public lands. For each of the seven QOL statements, more than three quarters of respondents affirmed the value of the public lands in Eagle County and how they contributed to different QOL indicators. Specifically, about 96% agreed that public lands directly enhance their QOL and nearly the same percentage (95%) agreed that public lands contribute to the beauty of Eagle County and provide excellent outdoor recreation opportunities (Figure 8). About 94% agreed that public lands in the county contribute to a healthy environment and 88% agreed that they provide opportunities for wildlife to thrive. Nearly the same percentage of respondents agreed that public lands contribute to a vibrant economy and enhance property values (83% and 81%, respectively).

Eagle County residents seem eager to hear more about land development projects. Nearly two-thirds (65%) of respondents were very-to-extremely interested in the county’s local land use development projects and another 30% were somewhat interested in them. Only 4% were not at all interested in local land use projects.

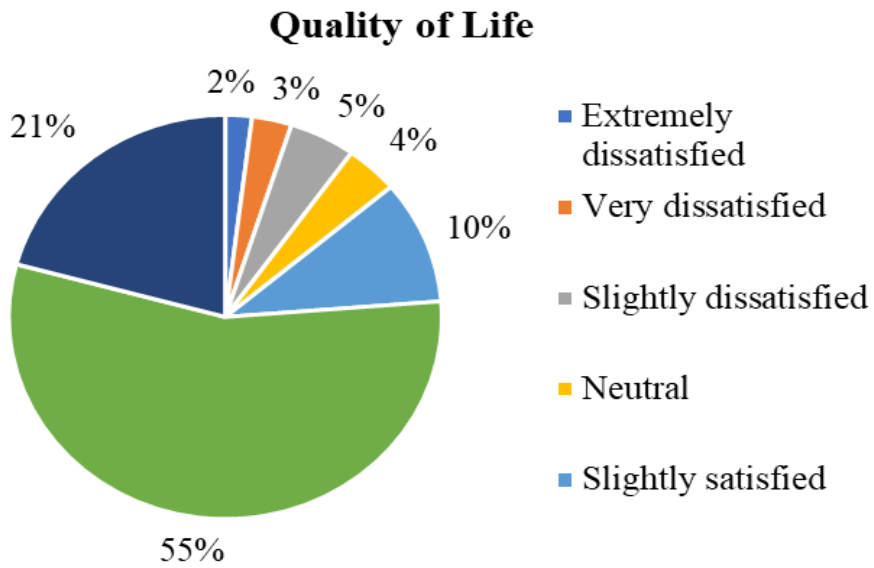


Figure 7. Overall satisfaction with quality of life in Eagle County.

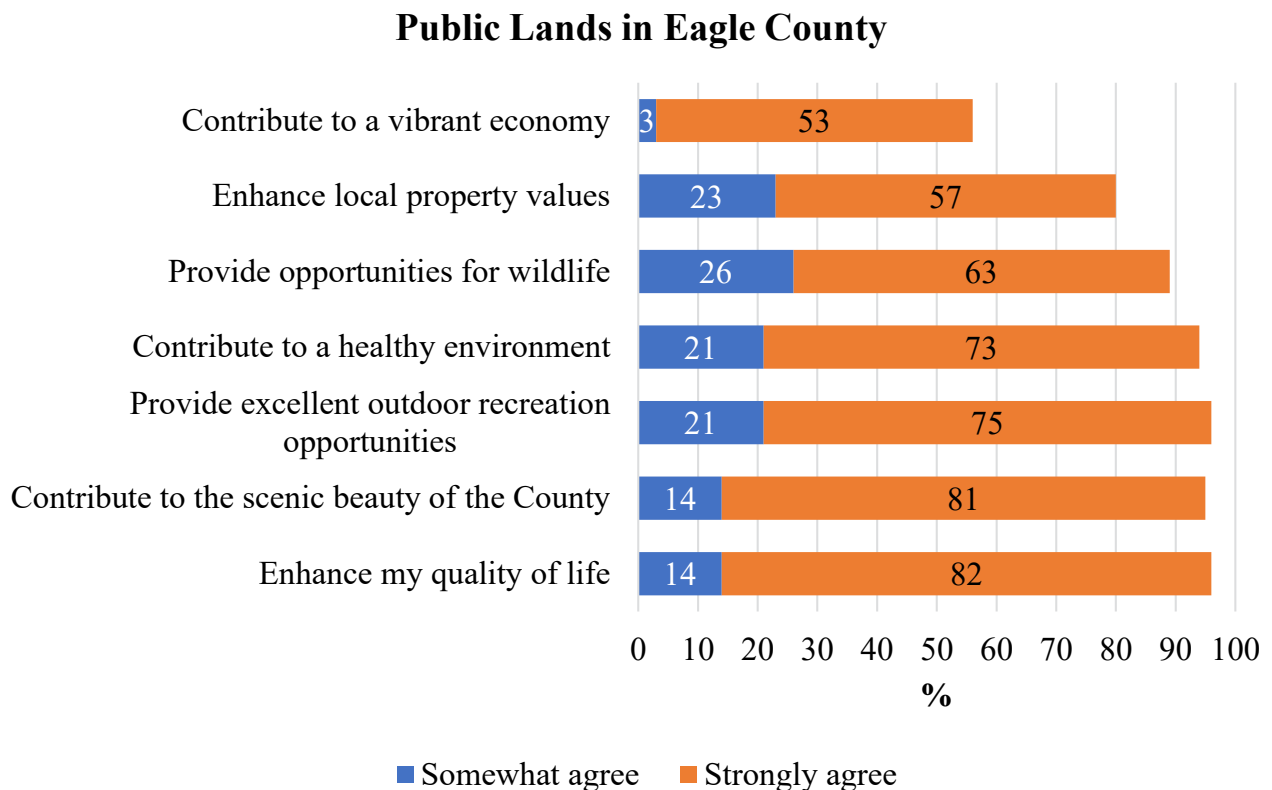


Figure 8. Contribution of Public Lands to Eagle County.

Calling on County Citizens: Civic Engagement

Results suggest that few Eagle County residents are likely to engage in behaviors that require more engagement (i.e., more significant time commitment). For example, about 73% of respondents are likely to sign a petition about a land use development project but far fewer are likely to attend a public meeting (45%), provide formal public comment about (40%) or contact local officials about a land use development project (38%) (Figure 9). It is important to also acknowledge that we combined somewhat likely and very likely response options. Between 26 and 36% of respondents were only *somewhat* likely to engage in each of the four behaviors.

Civic Engagement Likelihood

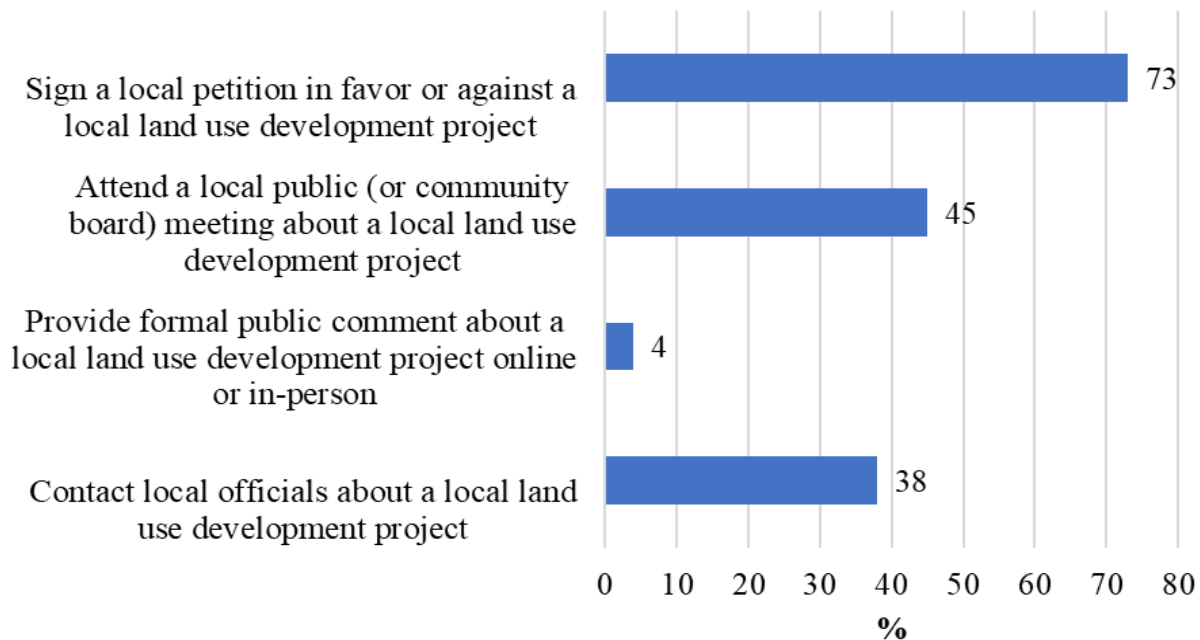


Figure 9. Likelihood of engaging in civic activities (combines somewhat and very likely responses).

How County Residents Receive Communication

The vast majority (84%) of respondents receive information about local land use development projects in Eagle County via local newspapers/newspaper websites. Additionally, nearly two-thirds (65%) receive information by talking to others in their community or social networks (i.e., word of mouth) and one-third use social media (e.g., Facebook) to learn about local projects. Searching for information online (e.g., Google searches) (18%), attending/watching local meetings (17%), and using other social media sites/apps such as Next Door (5%) are rarely used.

(Photo credit: Rick Spitzer)



Modes for Receiving Information on Local Land Use Projects

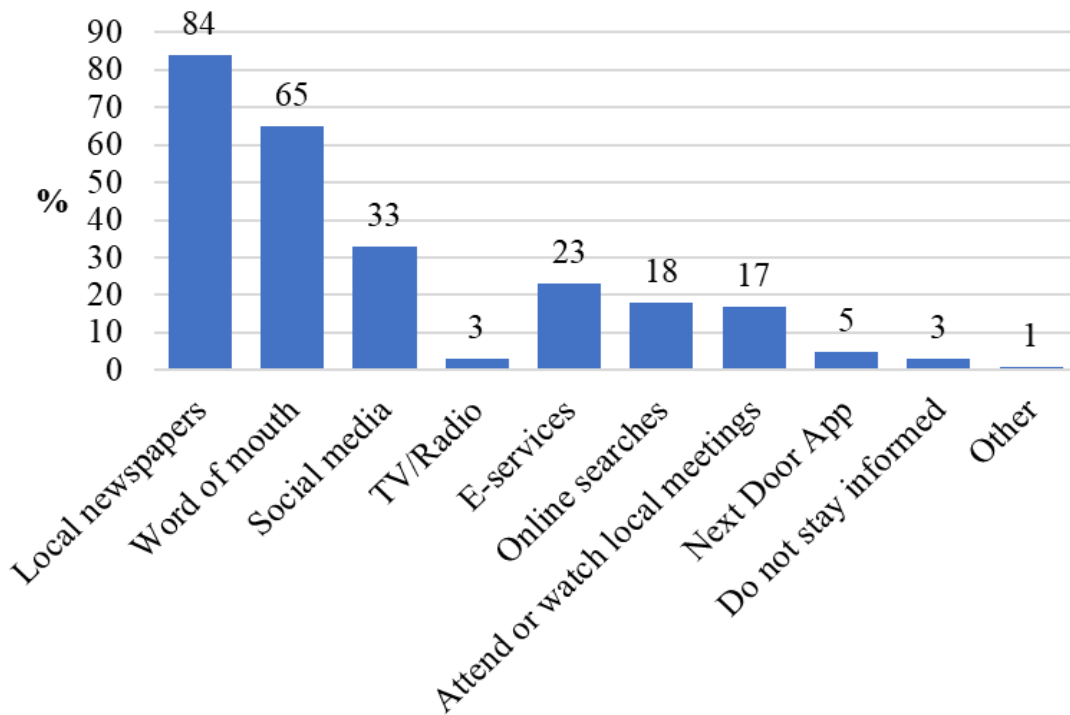


Figure 10. How Eagle County residents receive information about Local Land Use Development Projects.

Living in Eagle County for a Long Time

Overall respondents have lived in Eagle County for a significant amount of time. The vast majority (82%) of respondents have lived in Eagle County for 10 or more years. Upon closer inspection, about 40% have lived in Eagle County for 30 (or more years) and 26% have lived there between 20-29 years. (Table 6).

Table 6. Respondents Length of Time Living in Eagle County.

Range (Years)	Frequency (n= 845)	%
1 to 9	158	19
10 to 19	132	16
20 to 29	216	26
30 to 39	150	18
40 to 49	135	16
50 to 59	35	4
60+	19	2

A majority of respondents were from Eagle, Vail and Edwards (57%). About one-third of respondents were from Avon (10%), Basalt (9%) and Gypsum (11%). The remaining respondents were from Minturn, Red Cliff, Eagle-Vail, and other areas (Table 7).

Table 7. Comparing Respondents’ Residence Locations with Percent of Questionnaires Mailed to Residences Connected with Eagle County Towns.

Town	% of Sample (n=3000)	% of Respondents (n=863)	Town population as % of Eagle County population* (55,731)
Avon	18% (544)	10% (85)	11
Basalt	9% (9)	9% (80)	7
Eagle	18% (550)	20% (168)	13
Gypsum	14% (418)	11% (95)	14
Minturn	3% (76)	2% (18)	2
Red Cliff	0.5% (15)	1% (4)	.05
Vail	18% (549)	18% (150)	9
Edwards	17% (506)	20 (172)	18
Eagle-Vail		7 (60)	n/a
Other (e.g, Bond, Sweetwater, McCoy)	3% (83)	3 (22)	3 (22)

*Data obtained from U.S. 2020 Decennial Census

High Prevalence of Home Ownership

The majority (85%) of respondents own their residence. Eleven percent rent their current residence and 4% selected the “Other” category, which allowed them to write in their own response (e.g., living with a relative/friend).

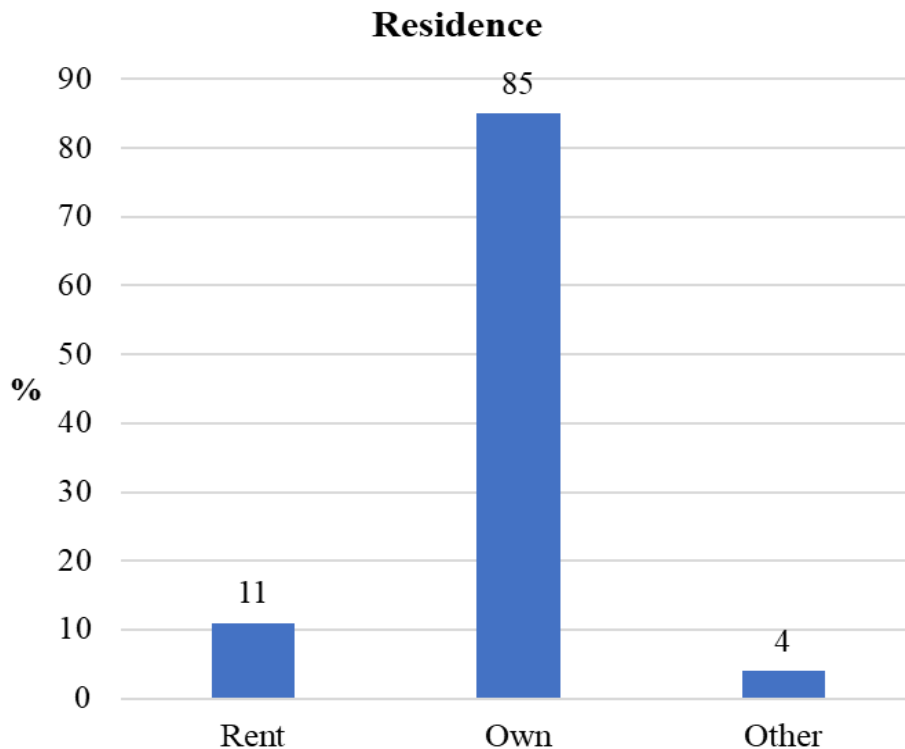


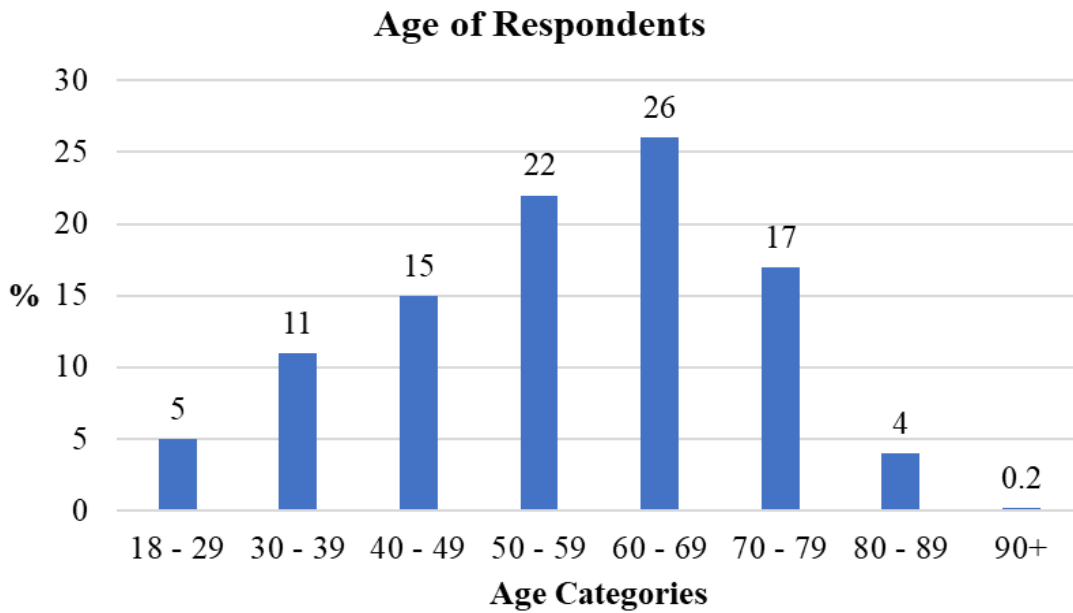
Figure 11. Residence Status

Sociodemographics

The average age of mail survey respondents was 57 years old. The age distribution of mail survey respondents was relatively even, though fewer respondents were in the youngest and oldest age ranges (Figure 12). However, we decided to group them according to the age ranges used in the telephone survey (Table 8). Results suggest that more mail survey respondents were older (i.e., 35% in the 65+ age group) than telephone respondents. On the contrary, more telephone survey respondents (32%) were in the younger age groups (i.e., 18-34 years old) compared to mail respondents (9%).

Figure 12. Age distribution of mail survey respondents.

Table 8. Comparison of mail and telephone survey respondents by age



Age groups	Mail Survey	Telephone Survey
18-34 years old	9	32
35-49 years old	21	25
50-64 years old	34	29
65+	35	15

Slightly more mail survey respondents self-identified as female (52%) than male (47%) and less than one percent (0.2%) identified as Gender Non-Conforming/Non-Binary.

Respondents' Gender Identification

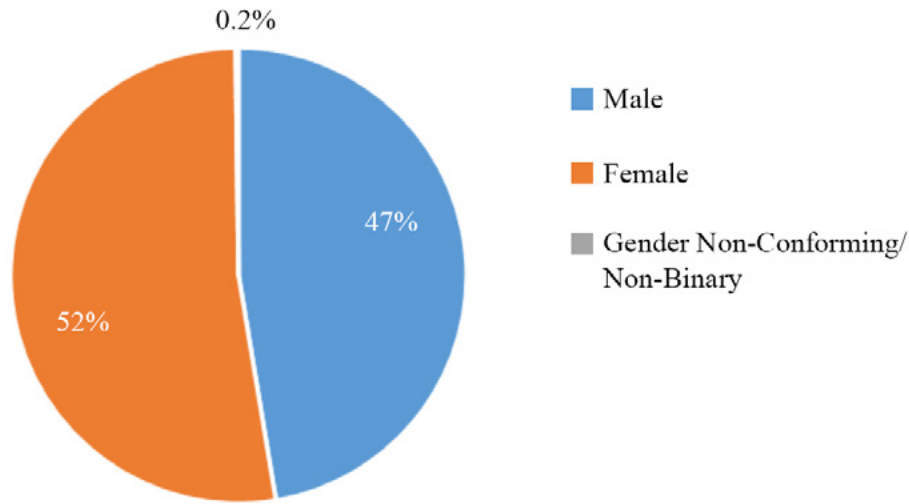


Figure 13. Gender Identification

A vast majority of mail survey respondents identified as White, non-Hispanic/Latino (93%), with 3% identifying as Hispanic/Latino (Table 9). Fewer telephone survey respondents identified as White, non-Hispanic/Latino (78%) but a greater percentage identified as Hispanic/Latino (17%).

According to the U.S. census, 95% of Eagle County residents self-identify as White alone. However, when factoring in the duality of Hispanic/Latino ethnicity self-identification alongside race, 67% identify as White/Not Hispanic or Latino, while 30% identify as Hispanic or Latino. In the U.S. Census, Hispanics may be of any race, so they also are included in applicable race categories.

Table 9. Race and Ethnicity Percentages of Respondents, Eagle County and the State of Colorado

Race/Ethnicity	% Mail survey respondents (n = 773)	% Mail survey nonrespondents (n = 50)	% Telephone survey respondents (n = 399)	% Eagle County	% Statewide
American Indian or Native Alaskan	1 (10)	2 (1)	<1 (3)	1	2
Asian	<1 (6)	12 (6)	<1 (3)**	1	4
Black or African American	0	2 (1)	<1 (2)	2	5
Hispanic/Latino*	3 (21)	8 (4)	17 (70)	30	22
Native Hawaiian or other Pacific Islander	<1 (1)	2 (1)	N/A	.1	.2
White, non-Hispanic/Latino	93 (723)	78 (39)	78 (313)	95	87
Other	1 (9)	18 (9)	2 (7)	n/a	3
Unsure	N/A	6 (3)	<1 (1)		

*Hispanic Origin is considered a separate category from Race and is defined as Hispanic or Latino (29.7%) or White alone, not Hispanic or Latino (67.0%)

**Combined Asian and Pacific Islander.

About 14% of mail survey respondents reported having a household income between \$80,000-99,999 compared to 10% of telephone survey respondents. The median household income in Colorado is approximately \$85,000 (United States Census Bureau Quick Facts, 2021). One-quarter of mail respondents indicated having a household income between \$100,000-149,999 (33% had income above \$150,000) (Figure 14). Similarly, about 21% of telephone survey respondents reported an income between \$100,000-149,999 (25% had income above \$150,000).

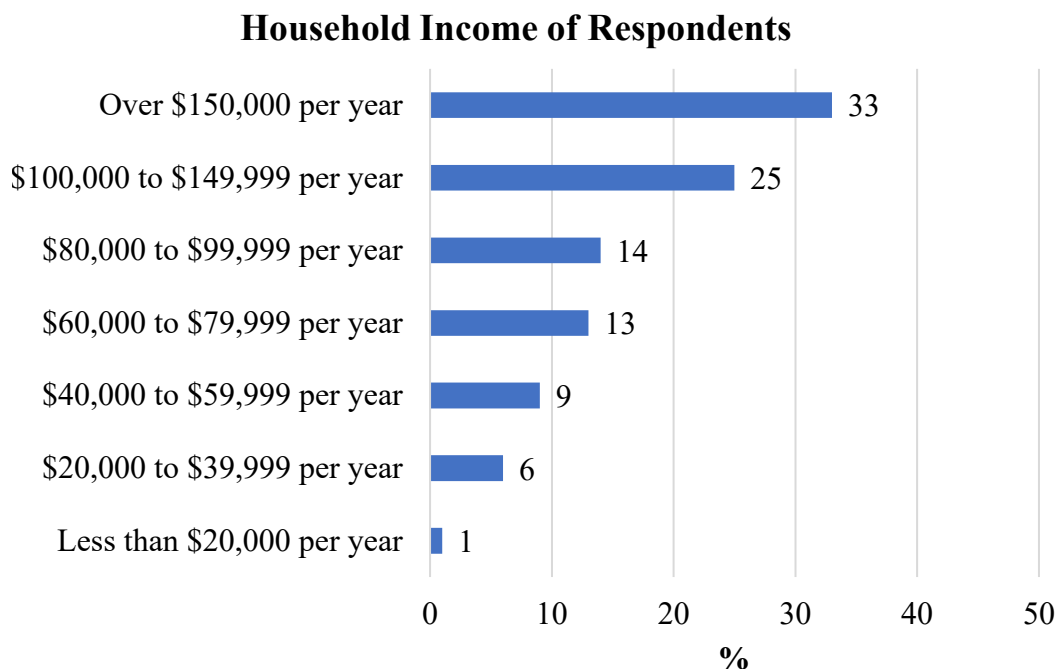


Figure 14. Household income (of mail-in survey respondents).

Discussion

Any natural resource management decision, regardless of spatial or temporal scale, involves tradeoffs and requires both biological and social data to inform decision making. In the context of wildlife management, social science data can and often does play an important role in helping land managers and other decision making bodies understand these nuances and tradeoffs (e.g., how to prioritize one outcome over another; identifying who is likely to benefit; and whether stakeholders will support or oppose such decisions).

Eagle County, Colorado - an area of the state known for its unique outdoor recreation opportunities and abundant wildlife - is facing increasing pressure to balance these interests as well as others including economic development. It is this intersection which served as the underlying focus of our research. Specifically, we sought to understand whether Eagle County residents were equally as interested in and as concerned about the long-term sustainability of wildlife as members of the CWR. Thus, the overarching goal of this inquiry was to identify whether and to what extent Eagle County residents value wildlife and how these associations compared to other land use preferences and outdoor recreation opportunities. In doing so, we would be able to test the assumption that residents feel similarly to the CWR members about wildlife.

Research conducted at the national level provides some support for CWR members' assumptions. Manfredo et al., (2020) found changes in the way United States residents perceive and are interested in wildlife. Specifically, the authors provided evidence to suggest that wildlife values in the United States are changing, becoming more mutualistic in orientation (Manfredo et al. 2020). This shift represents a departure from more traditional (or

utilitarian) views about wildlife including how they should be managed, for whom, and for what purposes. Mutualists are more likely to view wildlife as having intrinsic value in and of themselves and do not necessarily believe wildlife should be managed strictly for consumptive purposes. However, values including wildlife value orientations form slowly over time and are difficult to change (Rokeach 1968). On the contrary, attitudes – which represent positive or negative evaluations about a particular topic – more directly influence behaviors and are easier to influence (Decker et al. 2010; Fishbein and Ajzen 2009). As a result, wildlife managers typically examine public attitudes about or preferences for wildlife and wildlife management. For purposes of this study, we sought to fill gaps in both scholarship and practitioner knowledge about attitudes toward wildlife (Teel et al. 2005). The data we collected would then provide the CWR and county-level decision makers with tangible evidence about residents interests, preferences, and concerns which they can incorporate in local decision making contexts (e.g., regulations related to zoning districts).

Results from our study clearly illustrated the importance of wildlife to Eagle County residents. Not only do residents hold overwhelmingly positive attitudes about wildlife but these sentiments manifested in other ways including but not limited to: interests in sustaining wildlife populations, the prioritization and protection of critical wildlife habitat, concerns about losing wildlife habitat due to residential and commercial development, and preferences to protect wildlife/habitat even if doing so limited future recreation and development opportunities. However, this research also identified a disconnect between residents' priority preferences and what they believed the county is doing to integrate their interests and address their concerns. Most residents did not believe that the county is doing enough to protect critical habitat and they would prefer the county do more to ensure habitat be sustained in the future.

What remains unclear is why respondents believed this to be the case and who they think needs to do more to protect habitat in the county. We did not ask respondents how they believe public land is

managed in Eagle County or who (or which agency) is responsible for doing what. At first glance, it may seem as if residents are attributing blame or potential concerns about their preferences to “county-level” land managers when they may, in fact, be more concerned about issues affecting federal land. As a result, any insights gleaned from questions assessing land use priority preferences need to be considered within this larger context. We recommend future research examine residents' perceptions about land management and land management agencies in Eagle County. Doing so will help local, state, and federal land managers understand how to better communicate with residents. It will also help residents to better understand the interconnectedness of land management issues in the county and where to voice any grievances or pose questions they might have about a particular issue, land use policy, or project.

Regardless, we learned that Eagle County residents want more to be done in terms of sustaining wildlife habitat than they believe is currently being done. We also learned that respondents from both mail and telephone surveys prefer wildlife habitat be expanded even if doing so limits future development projects and, to a lesser extent, outdoor recreation opportunities. Minor differences were detected across mail and telephone survey respondents with respect to their preferences for new development projects versus recreation opportunities or wildlife, but these relationships were not meaningfully substantive (i.e., minimal-to-typical effect size).

While the CWR has already positioned itself as a leading group of engaged stakeholders concerned about wildlife and wildlife habitat in Eagle County, these data reveal an important nuance for the potential role that the CWR could play moving forward. Specifically, the CWR should think of new ways to promote itself to the public as a facilitator for discussions around wildlife issues in Eagle County. Using survey data from this project, the CWR will now be able to share public interests, preferences, and concerns about wildlife habitat or other land use projects with decision makers and also communicate about these topics (and projects) with residents via their most preferred communication channels including local newspapers. By identifying and

developing these channels of communication, the CWR can provide an avenue for stakeholders to discuss controversial land use topics and decisions, while also providing the professional perspectives and expertise of its diverse membership.

Findings from this study also illustrate the appreciation that residents have for nature and their opportunities to derive enjoyment from nature. Spending time in nature was one of the most important reasons why residents recreate outdoors, with 77-84% of respondents recreating at least two or more times per week. This is far more frequent than state recreation averages though the top two activities mirror those identified in previous research (i.e., walking/dog walking, hiking) (Colorado Parks and Wildlife 2020). The availability of public lands is an important factor to consider when trying to understand the avidity of outdoor recreation participation. The majority of respondents agreed that public lands in Eagle County enhance their quality of life and contribute to the beauty of the county. Given these insights, it was not overly surprising that nearly all respondents were satisfied with their quality of life. What remains unclear is whether and how future land use decisions will impact residents' quality of life over time. However, results from this inquiry, specifically those highlighting potential tradeoffs, provides some insight. For example, it was abundantly clear that residents prefer wildlife/habitat be conserved over recreation opportunities and future development projects. What these results do not suggest is that residents' perceptions are a zero sum game. Meaning, their preferences may deviate slightly from what our results indicated depending on the context at hand. In fact, about two-thirds of all respondents (mail and telephone) would prefer the county find a balance between the three, larger interests.

Unfortunately, there is mixed evidence in the literature regarding the tradeoffs between recreation interests and wildlife habitat. Since the 1980s there has been a growing sentiment about the purpose of protected areas and whether they should be expanded to equally include human welfare alongside biodiversity conservation (Naughton-Treves et al. 2005). Arguments for including human welfare in protected areas management include the physical and mental



(Photo credit: Rick Spitzer)



(Photo credit: Rick Spitzer)

health benefits associated with outdoor recreation. Physical benefits include managing weight, controlling blood pressure, and decreasing the risk of a heart attack. Some of the mental benefits include reduced stress and depression (Godbey 2009). On the contrary, increased recreation can negatively affect wildlife and wildlife habitat. For example, both motorized and non-motorized recreation (e.g., snowmobiling, hiking, horseback riding) can impact wildlife by altering habitat preferences and use, causing declines in species abundance, and reducing reproductive success (Larson et al. 2016; Naylor et al. 2009; Trombulak and Frissell 2001). There is some evidence that wildlife may become accustomed to non-motorized disturbances when the activities are consistent and predictable, but these data often depend on the level of the disturbance, species, age, and sex of the animal (Monz 2021). Thus, balancing outdoor recreation opportunities and protecting critical wildlife habitat is a difficult task but one that the CWR is well-positioned to advise upon given the composition of the group which includes both wildlife professionals and outdoor recreation management professionals.

Conclusion

This study represented a collaborative effort between local, state, federal and nonprofit organizations to systematically assess the attitudes of Eagle County, Colorado residents about the disparate yet intersected topics of land use, wildlife habitat, and outdoor recreation. We collected data using a mail-survey with an online option and implemented it with a sample of 3,000 residents from the different county municipalities/census designated areas. Additionally we collected data from a telephone survey and non-response bias telephone follow-up survey.

Overall, Eagle County residents hold positive attitudes toward wildlife and are concerned about wildlife habitat loss. Additionally, they want the County to take action and further prioritize wildlife habitat conservation. Outdoor recreation is also very important to Eagle County residents, who are avid outdoor enthusiasts. There is concern among residents about increasing land development and how they may be affecting wildlife populations and to a lesser degree, outdoor recreation opportunities. Specifically,

residents are interested in land use decisions that affect wildlife and outdoor recreation and most would prefer the County prioritize the protection of wildlife habitat. However, interests and preferences - while critical for decision makers - do not always result in direct support for land use decisions especially if citizens are unaware of planning processes or how to most effectively get involved. Findings from this study also indicated that residents were less likely to engage in land use planning decisions that require more active participation. This highlights another complex challenge at the intersection of land use decisions. Identifying ways to engage citizens in proactive natural resource management and planning processes may require additional outreach. Fortunately, these results also illustrate the positive contribution that wildlife and outdoor recreation opportunities have on residents' quality of life. As a result, it is increasingly important for residents to be aware of future land use projects especially if they wish to see their interests reflected in land use decision making processes.



(Photo credit: Rick Spitzer)

Works Cited

- Barker, L., and Dawson, C. 2010. Exploring the Relationship Between Outdoor Recreation Activities, Community Participation, and Environmental Attitudes. U.S. Forest Service, Northern Research Station, Bolton Landing, New York, USA. <<https://www.fs.usda.gov/treeearch/pubs/40351>>. Accessed 9 December 2021.
- Colorado College State of the Rockies Project. 2020. Colorado College State of the Rockies Project: 2020 Conservation in the West Poll. Colorado College, Colorado Springs, Colorado, USA.
- Colorado Department of Local Affairs. 2015. Colorado Land Use Survey. <<https://cdola.colorado.gov/colorado-land-use-survey>>. Accessed 8 December 2021.
- Colorado Parks and Wildlife [CPW]. 2019. The 2019 Statewide Comprehensive Outdoor Recreation Plan. <<https://cpw.state.co.us/Documents/Trails/SCORP/Final-Plan/2019-SCORP-Report.pdf>>. Accessed 14 December 2021.
- Colorado Parks and Wildlife [CPW]. 2020. Policy and Planning Unit. Existing Conditions, Trends, and Projections in Outdoor Recreation. <https://cpw.state.co.us/Documents/About/StrategicPlan/Existing_Conditions_Trends_and_Projections_in_Outdoor_Recreation_Report.pdf>. Accessed 8 June 2021.
- Daniel J. Decker, Darrick T.N. Evensen, William F. Siemer, Kirsten M. Leong, Shawn J. Riley, Margaret A. Wild, Kevin T. Castle, Charles L. Higgins. 2010. Understanding Risk Perceptions to Enhance Communication about Human-Wildlife Interactions and the Impacts of Zoonotic Disease, *ILAR Journal*, Volume 51, Issue 3, 2010, Pages 255–261, <https://doi.org/10.1093/ilar.51.3.255> Accessed 12 December 2022.
- Dillman, D.A., Smyth, J.D., and Christian, L.M. 2014. Internet, Phone, Mail, and Mixed-Mode Surveys: The Tailored Design Method. John Wiley & Sons Inc., Hoboken, New Jersey, USA.
- Duggan, M., and Smith, A. 2013. Cell Internet Use 2013. <<https://www.pewresearch.org/internet/2013/09/16/cell-internet-use-2013/>>. Accessed 9 September 2021.
- Eagle County Land Use. 2022. Land Use Regulations. <<https://www.eaglecounty.us/planning/landuse>>. Accessed 5 April 2022.
- Eagle County Open Space. 2020. Open Space Program. <<https://www.eaglecounty.us/openspace>>. Accessed 3 April 2022.
- Eagle County Community Wildlife Roundtable [CWR]. 2019. CWR home page. <<https://hub.walkingmountains.org/eagle-county-wildlife-roundtable-about-us>>. Accessed 5 May 2021.
- Eagle County GIS Department. 2022. Online Printable Maps. <<https://www.eaglecounty.us/gis/onlineprintablemaps>>. Accessed 15 November 2021.
- Edwards, M.L., Dillman, D.A., and Smyth, J.D. 2013. Attitudes of Nebraska residents on Nebraska water management. Washington State University, Pullman, Washington, USA. <http://www.websm.org/uploadi/editor/1381173568Dillman_2013_Attitudes_of_Nebraska_Residents.pdf>. Accessed 9 September 2021.
- Fazio, R.H., Chen, J.M., McDonel, E.C., and Sherman, S.J. 1982. Attitude accessibility, attitude-behavior consistency, and the strength of the object-evaluation association. *Journal of Experimental Social Psychology* 18(4):339-357. <<https://doi.org/10.1037/0022-3514.47.2.277>>. Accessed 5 June 2021.
- Fishbein, M., and Ajzen, I. 2009. Predicting and Changing Behavior: The Reasoned Action Approach. Psychology Press, New York, USA.
- FitzGibbon, S.I., and Jones, D.N. 2006. A community-based wildlife survey: The knowledge and attitudes of residents of suburban Brisbane, with a focus on bandicoots. *Wildlife Research* 33:233-241. <<https://doi.org/10.1071/WR04029>>. Accessed 5 June 2021.

- Gawronski, B., and Bodenhausen, G. V. 2006. Associative and Propositional Processes in Evaluation: An Integrative Review of Implicit and Explicit Attitude Change. *Psychological Bulletin* 132(5):692–731. <<https://doi.org/10.1037/0033-2909.132.5.692>>. Accessed 12 July 2021.
- Geoghegan, J. 2001. The value of open spaces in residential land use. *Land Use Policy* 19(1):91-98. <[https://doi.org/10.1016/S0264-8377\(01\)00040-0](https://doi.org/10.1016/S0264-8377(01)00040-0)>. Accessed 5 June 2021.
- Gibson, C., Dufty, R., and Drozdowski, D. 2005. Resident Attitudes to Farmland Protection Measures in the Northern Rivers Region, New South Wales. *Australian Geographer* 36(3):369-383. <<https://doi.org/10.1080/00049180500325744>>. Accessed 5 June 2021.
- Godbey, G. 2009. Outdoor Recreation, Health, and Wellness: Understanding and Enhancing the Relationship. Resources for the Future. <<https://media.rff.org/documents/RFF-DP-09-21.pdf>>. Accessed 3 March 2022.
- Gochis, D., Schumacher, R., Friedrich, K., Doesken, N., Kelsch, M., Sun, J., Ikeda, K., Lindsey, D., Wood, A., Dolan, B., Matrosov, S., Newman, A., Mahoney, K., Rutledge, S., Johnson, R., Kucera, P., Kennedy, P., Sempere-Torres, D., Steiner, M., Roberts, R., Wilson, J., Yu, W., Chandrasekar, V., Rasmussen, R., Anderson, A., and Brown, B. 2015. The Great Colorado Flood of September 2013. *Bulletin of the American Meteorological Society* 96(9):1461-1487. <<https://doi.org/10.1175/BAMS-D-13-00241.1>>. Accessed 27 February 2022.
- Green, G. P., Marcouiller, D. W., Deller, S. C., Erkkila, D., and Sumathi, N. R. 2010. Local Dependency, Land Use Attitudes, and Economic Development: Comparisons Between Seasonal and Permanent Residents. *Rural Sociology* 61(3):427-445. <10.1111/j.1549-0831.1996.tb00627.x>. Accessed 5 June 2021.
- Greenwald, A. G., and Banaji, M. R. 1995. Implicit Social Cognition: Attitudes, Self-Esteem, and Stereotypes. *Psychological Review* 102(1):4–27. <<https://doi.org/10.1037/0033-295X.102.1.4>>. Accessed 12 July 2021.
- Headwaters Economics. 2019. Headwaters Economics Industries Reports. <<https://headwaterseconomics.org/apps/economic-profile-system/8037>>. Accessed 5 May 2021.
- Ingold, J. 2020. Five charts that show where 2020 ranks in Colorado wildfire history. *The Colorado Sun*. 20 Oct 2020. <<https://coloradosun.com/2020/10/20/colorado-largest-wildfire-history/>>. Accessed 27 February 2022.
- Larson, C. L., Reed, S. E., Merenlender, A. M., and Crooks, K. R. 2016. Effects of Recreation on Animals Revealed as Widespread through a Global Systematic Review. *PLoS ONE* 11(12): e0167259. <<https://doi.org/10.1371/journal.pone.0167259>>. Accessed 3 March 2022.
- Manfredo, M. J. 2008. Attitudes and the Study of Human Dimensions of Wildlife. Pages 1-27 in *Bright, A.D., co-author. Who Cares About Wildlife?*. Springer, New York, New York, USA.
- Manfredo, M.J, Sullivan, L., Don Carlos, A. W., Dietsch, A. M., Teel, T.L., Bright, A. D., and Bruskotter, J. 2018. America's Wildlife Values: The Social Context of Wildlife Management in the U.S. Department of Human Dimensions of Natural Resources, Colorado State University, Fort Collins, Colorado, USA. <<https://sites.warnercnr.colostate.edu/wildlifevalues/wp-content/uploads/sites/124/2019/01/AWV-National-Final-Report.pdf>>. Accessed 12 June 2021.
- Manfredo, M. J., Teel, T. L., Don Carlos, A. W., Sullivan, L., Bright, A. D., Dietsch, A. M., Bruskotter, J., and Fulton, D. 2020. The changing sociocultural context of wildlife conservation. *Conservation Biology*, 34(6):1549–1559. <<https://doi.org/10.1111/cobi.13493>>. Accessed 5 June 2021.
- Millennium Ecosystem Assessment. 2005. *Ecosystems and Human Well-being: Synthesis*. Island Press, Washington, District of Columbia, USA.

- Miller, A. B., King, D., Rowland, M., Chapman, J., Tomosy, M., Liang, C., Abelson, E. S., and Truex, R. 2020. Sustaining wildlife with recreation on public lands: a synthesis of research findings, management practices, and research needs. U.S. Forest Service, Pacific Northwest Research Station, Corvallis, Oregon, USA. <<https://www.fs.usda.gov/treearch/pubs/61721>>. Accessed 27 February 2022.
- Monz, C. 2021. Outdoor Recreation and Ecological Disturbance: A Review of Research and Implications for Management of the Colorado Plateau Province. Recreation Ecology Lab, Utah State University, Logan, Utah, USA. <https://suwa.org/wp-content/uploads/RecreationReport_Sept2021.pdf>. Accessed 3 March 2022.
- Naughton-Treves, L., Holland, M. B., and Brandon, K. 2005. The Role of Protected Areas in Conserving Biodiversity and Sustaining Local Livelihoods. *Annual Review of Environment and Resources* 30:219-252. <<https://doi.org/10.1146/annurev.energy.30.050504.164507>>. Accessed 3 March 2022.
- Naylor, L. M., Wisdom, M. J., and Anthony, R. G. 2009. Behavioral Responses of North American Elk to Recreational Activity. *The Journal of Wildlife Management* 73(3):328-338. <<https://www.jstor.org/stable/40208532>>. Accessed 3 March 2022.
- Pew Internet & American Life Project. 2013. 51% of U.S. adults bank online. <<http://www.pewinternet.org/2013/08/07/51-of-u-s-adults-bank-online/>>. Accessed 9 Sept 2021.
- Pew Internet & American Life Project. 2013. Broadband vs. dial up adoption over time. <<http://www.pewinternet.org/data-trend/internet-use/connection-type/>>. Accessed 9 September 2021.
- Pew Internet & American Life Project. 2013. Internet use over time [Percent of adults who use the Internet]. <<http://www.pewinternet.org/data-trend/internet-use/internet-use-over-time/>>. Accessed 9 September 2021.
- Prentzel, O. 2021. Nearly half of Colorado has shed its drought status since last year, but the coming months don't look good. *Colorado Sun*. 10 September 2021. <<https://coloradosun.com/2021/09/10/colorado-drought-to-worsen-in-coming-months/>>. Accessed 27 February 2022.
- Rainie, L., and Smith, A. 2013. Tablet and e-reader ownership update. <<https://www.pewresearch.org/internet/2013/10/18/tablet-and-e-reader-ownership-update/>>. Accessed 9 September 2021.
- Rokeach, M. 1968. *Beliefs, attitudes, and values: A theory of organization and change*. Jossey-Bass, Inc., San Francisco, California, USA.
- Smyth, J.D., Dillman, D.A., Christian, L.M., and O'Neill, A.C. 2010. Using the Internet to Survey Small Towns and Communities: Limitations and Possibilities in the Early 21st Century. *The American Behavioral Scientist* 53(9):1423-1448. <<https://doi.org/10.1177/0002764210361695>>. Accessed 9 September 2021.
- Thompson, A.W. 2013. Northern Wisconsin Landowner Survey: Understanding the influence of forest landowner attitudes on implementing restrictive development regulations. University of Wisconsin, Stevens Point, Wisconsin, USA. <https://www.uwsp.edu/cnr-ap/clue/Documents/Forests/NWLS_FinalReport-08052013.pdf>. Accessed 5 June 2021.
- Trombulak, S. C., and Frissell, C. A. 2001. Review of Ecological Effects on Roads on Terrestrial and Aquatic Communities. *Conservation Biology* 14(1):18-30. <<https://doi.org/10.1046/j.1523-1739.2000.99084.x>>. Accessed 3 March 2022.
- Wilson, L.S., and Schooler, T.Y. 2000. A Model of Dual Attitudes. *Psychological Review* 107(1):101-126. <<https://doi.org/10.1037/0033-295X.107.1.101>>. Accessed 12 July 2021.
- U.S. Census Bureau. (2021). Quick Facts Eagle County, Colorado. <<https://www.census.gov/quickfacts/fact/table/eaglecountycolorado/PST045221>> Accessed 14 December 2021

Appendices

Mail Survey Statistical Summary

Eagle County Wildlife, Recreation, and Land Use Survey



Photo courtesy of Rick Spitzer



For the duration of this survey, when we use the words “**development**” and “**land use**” we mean the following:

Development (according to Eagle County) includes but is not limited to: (1) The construction, reconstruction, conversion, expansion, or structural alteration, relocation, or enlargement of any buildings or structures, (2) any use or change in use of any buildings, land, or water, etc.

Land use is a term used to describe the human use of land. It represents the economic and cultural activities (e.g., residential, recreational uses, agricultural, etc.) that are practiced at a given place.

Background Information

Percentages indicated throughout unless otherwise noted

[n = number of respondents; SD = standard deviation; \bar{X} = mean]

About You

1. Approximately how many years have you lived in Eagle County? (Please write-in your response here.) _____ YEARS (n = 845)

	Frequency	%
1 to 9	158	18.7
10 to 19	132	15.6
20 to 29	216	25.6
30 to 39	150	17.8
40 to 49	135	16.0
50 to 59	35	4.1
60 to 69	11	1.3
70+	8	0.9

2. Which town do you live in? (Please check one.) (n = 854)

	Frequency	% (of Respondents)	Sample (n = 3000)	% (of Sample)
Avon	85	10.0	544	18.1
Basalt	80	9.4	259	8.6
Eagle	168	19.7	550	18.3
Gypsum	95	11.1	418	13.9
Minturn	18	2.1	76	2.5
Red Cliff	4	0.5	15	0.5
Vail	150	17.6	549	18.3
Edwards	172	20.1	506	16.9
Eagle-Vail	60	7.0		
Other (e.g. Bond, Sweetwater, McCoy)	22	2.6	83	2.8

3. Do you currently rent or own your Eagle County residence? (*Please check one.*) (n = 855)
- 10.5 Rent
 - 85.4 Own
 - 4.1 Other (*please specify*): _____

Your Perceptions about the Environment, Wildlife, and Wildlife Habitat

4. Which of the following environmental issues are you most concerned about today?
 (*Please check the **top three** issues you are concerned about.*)

	Frequency	%
Wildfires	551	63.8
Drought and water levels	497	57.6
Climate change	435	50.4
Loss of habitat for fish and wildlife	350	40.6
Residential and commercial development	293	34.0
Pollution of bodies of waters	153	17.7
Human-wildlife conflict	135	15.6
Air quality	94	10.9
Development for recreation	58	6.7
Other	25	2.9

5. Which of the following best describes your general attitude about wildlife in Eagle County?
 (*Please check one.*) (n = 853, $\bar{X} = 2.87$, SD = 377)

- 0 I do **not** enjoy wildlife in Eagle County and regard them as a nuisance.
- 14.5 I enjoy wildlife in Eagle County but worry about problems they may cause.
- 84.1 I enjoy wildlife in Eagle County and do not worry about the problems they may cause.
- 1.4 I have no particular feelings about wildlife in Eagle County.

6. How important to you is that wildlife populations in Eagle County are sustained over time?
 (*Please check one.*) (n = 854, $\bar{X} = 3.79$, SD = .530)

- 0.5 Not at all important
- 4.2 Somewhat important
- 11.5 Moderately important
- 83.8 Very important

7. How much of a priority do you think Eagle County *currently* places on the protection of critical wildlife habitat? (*Please check one.*) (n = 845, \bar{X} = 2.65, SD = .767)

- 6.3 It is not a priority of the County
- 34.3 It is a low priority of the County
- 47.7 It is a moderate priority of the County
- 11.7 It is a high priority of the County

8. How much of a priority *should* protecting critical wildlife habitat be in Eagle County? (*Please check one.*) (n = 853, \bar{X} = 3.71, SD = .502)

- 0.4 It should not be a priority of the County
- 1.2 It should be a low priority of the County
- 25.9 It should be a moderate priority of the County
- 72.6 It should be a high priority of the County

9. To what extent do you disagree or agree with the following statement? (*Please check one.*) (n = 858, \bar{X} = 4.38, SD = 1.015)

“I am concerned that important wildlife habitat in Eagle County may be converted for residential or commercial development in the near future”

Strongly disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Strongly agree
2.7	5.4	7.5	20.3	64.2

Recreation Activities and Interests

10. On average, how often did you **recreate outdoors** in Eagle County during the previous 12 months? (*Please check one.*) (n = 847, \bar{X} = 4.32, SD = .827)

- 0.5 Never
- 2.7 Less than once per week
- 10.6 Once per week
- 38.4 2-4 times per week
- 46.2 More than 4 times per week
- 1.7 I am not sure

11. Which of the following activities **do you enjoy** in Eagle County? (*Please check all that apply.*)

Water-based Activities

	Frequency	%	
A	59	6.8	Motorized (e.g., water/jet skiing, power boating)
B	439	50.9	Non-motorized (e.g., swimming, kayaking, rafting, paddle boarding, etc.)

Trail Activities

C	470	54.5	Biking (mountain/road)
D	609	70.6	Walking/dog walking
E	185	21.4	Trail running/jogging
F	607	70.3	Hiking/backpacking
G	85	9.8	Horseback riding (Equestrian)
H	111	12.9	Motorized (e.g., ATVs)

Winter Activities

I	491	56.9	Snowshoeing/cross country skiing
J	90	10.4	Snowmobiling
K	579	67.1	Skiing/snowboarding

Wildlife-related Activities

L	256	29.7	Bird watching
M	410	47.5	Wildlife watching (excluding bird watching)
N	278	32.2	Fishing
O	138	16.0	Hunting

Other Outdoor Activities

P	482	55.9	Camping (tent, RV, cabin/yurt)
Q	235	27.2	Photography
R	273	31.6	Picnicking/group picnic sites
S	93	10.8	Climbing

Other activity not listed above (*please write in your response below.*)

T	66	7.6	
---	----	-----	--

12. Based on your responses to question 11 (above), what is the **one activity** you enjoy doing the most in Eagle County? (Please **write in** the letter corresponding with this activity.)

#1 activity: _____

(*see results in report)

Reasons Why You Recreate Outdoors

13. How important to you is each of the following reasons to recreate outdoors in Eagle County? (Please check only one response per reason.)

<i>Reasons to recreate outdoors</i>	Not important	Slightly important	Moderately important	Very important
To relax (n = 824, \bar{X} = 3.68, SD = .623)	1.1	5.2	18.3	75.4
To exercise/improve physical health (n = 837, \bar{X} = 3.80, SD = .469)	0.2	2.3	14.7	82.8
To spend time with friends/family (n = 829, \bar{X} = 3.52, SD = .711)	1.8	7.4	27.4	63.4
To enjoy or spend time in nature (n = 831, \bar{X} = 3.81, SD = .436)	0.2	1.1	16.1	82.6
To do something new (n = 778, \bar{X} = 2.69, SD = 1.009)	14.5	27.5	32.4	25.6
To learn about wildlife, plants, insects, etc. (n = 803, \bar{X} = 2.76, SD = .948)	9.2	31.9	32.3	26.7
For spiritual/cultural purposes (n = 786, \bar{X} = 2.39, SD = 1.089)	26.5	29.0	23.7	20.9
To exercise my pet (n = 771, \bar{X} = 2.69, SD = 1.304)	32.4	7.9	17.9	41.8
For fun/thrill/excitement (n = 800, \bar{X} = 3.11, SD = .941)	8.4	14.1	35.4	42.1
For solitude/self-reflection (n = 820, \bar{x} = 3.34, SD = .823)	4.0	10.5	32.7	52.8
To enjoy scenic views (n = 831, \bar{X} = 3.71, SD = .533)	0.5	2.4	22.5	74.6
To feel like I accomplished something (n = 803, \bar{X} = 3.00, SD = .963)	9.8	18.7	33.3	38.1
To do the #1 activity that you enjoy in Eagle County (n = 826, \bar{X} = 4.79, SD = .533)	1.2	2.1	13.7	83.1
To avoid traffic (n = 798, \bar{X} = 3.06, SD = 1.086)	13.7	15.0	23.2	48.1

Living in Eagle County

14. Overall, how satisfied are you with the quality of life in your community?
 (n = 843, \bar{X} = 5.67, SD = 1.313)

When considering your quality of life, you can think about if Eagle County is a good and safe place to live, to raise children, to work in, to grow old in, to appreciate the things you enjoy, to make friends, to feel valued and a part of the community?

- 1.7 Extremely dissatisfied
- 3.1 Very dissatisfied
- 5.2 Slightly dissatisfied
- 3.6 Neutral
- 9.8 Slightly satisfied
- 55.9 Very satisfied
- 20.8 Extremely satisfied

15. To what extent do you disagree or agree with each the following statements about public lands in Eagle County (e.g., local, state, and federal). (*Please check **one** response for **each**.*)

<i>Public land in Eagle County...</i>	Strongly disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Strongly agree
...enhances my quality of life (n = 840, \bar{X} = 4.78, SD = .552)	0.4	0.7	2.3	14.3	82.4
...provides opportunities for wildlife to thrive (n = 842, \bar{X} = 4.43, SD = .901)	1.2	5.2	5.5	25.7	62.5
...contribute to a healthy environment (n = 841, \bar{X} = 4.63, SD = .694)	0.5	1.8	4.3	20.7	72.8
...contribute to a vibrant economy (n = 839, \bar{X} = 4.32, SD = .880)	1.2	2.6	12.9	29.9	53.4
...provide excellent outdoor recreation opportunities (n = 840, \bar{X} = 4.69, SD = .619)	0.7	0.4	3.1	21.0	74.9
...contribute to the scenic beauty of the County (n = 840, \bar{X} = 4.73, SD = .659)	1.0	1.0	3.2	14.2	80.7
...enhances local property values (n = 837, \bar{X} = 4.31, SD = .950)	2.0	2.4	14.9	23.4	57.2

Land Use Planning and local Activities in Eagle County

16. How interested are you in local land use development projects in Eagle County?

(Please check one.) (n = 836, \bar{X} = 2.86, SD = .832)

- 4.2 Not at all interested
- 30.0 Somewhat interested
- 41.4 Very interested
- 24.4 Extremely interested

17. How much of a priority should Eagle County's ongoing work to acquire, maintain and preserve open space be, over the next 5-10 years? (Please check one.)

(n = 838, \bar{X} = 3.71, SD = .602)

- 1.6 Not a priority at all
- 3.1 Low priority
- 18.3 Medium priority
- 77.1 High priority

18. Please indicate how much you disagree or agree with each of the following statements about your preferences in Eagle County. (Please check **one** response for **each** statement.)

	Strongly disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Strongly agree
I would prefer to have more outdoor recreation opportunities even if that means limiting future land use development project (n = 820, \bar{X} = 4.13, SD = 1.100)	3.2	8.0	11.6	27.1	50.1
I would prefer having more outdoor recreation opportunities even if that means reducing wildlife habitat in Eagle County (n = 824, \bar{X} = 1.76, SD = .989)	52.4	28.5	11.0	6.4	1.6
I would prefer wildlife habitat be protected even if doing so restricts future land use development projects (n = 826, \bar{X} = 4.28, SD = .985)	1.6	6.5	9.3	27.4	55.2
I would prefer wildlife habitat be protected even if doing so limits future outdoor recreation opportunities (n = 827, \bar{X} = 3.97, SD = 1.105)	2.9	11.1	11.9	34.5	39.7
I would prefer new land use development projects even if they reduce wildlife habitat (n = 824, \bar{X} = 1.57, SD = .891)	63.1	23.5	7.4	5.2	0.7
I would prefer new land use development projects even if doing so limits future outdoor recreation opportunities (n = 823, \bar{X} = 1.83, SD = 1.098)	52.5	26.1	9.8	8.6	2.9
To the extent possible, I would prefer decision makers find ways to balance new land use development projects, wildlife habitat, and future outdoor recreation opportunities equally (n = 820, \bar{X} = 3.83, SD = 1.334)	8.7	12.0	10.9	24.5	44.0

19. How likely are you to do any of the following in the next 12 months? (*Please check **one** response for **each** activity.*)

	Very unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Very likely
Attend a local public (or community board) meeting about a local land use development project (n = 828, \bar{X} = 3.00, SD = 1.355)	20.3	17.8	16.5	32.4	13.0
Contact local officials about a local land use development project (n = 825, \bar{X} = 2.86, SD = 1.322)	21.0	20.8	20.4	26.5	11.3
Sign a local petition in favor or against a local land use development project (n = 827, \bar{X} = 3.89, SD = 1.187)	7.1	7.0	12.6	36.3	37.0
Provide formal public comment about a local land use development project online or in-person (n = 825, \bar{X} = 2.96, SD = 1.332)	19.6	18.1	22.3	26.4	13.6

Communication

20. How do you currently receive information about local land use development projects in Eagle County of interest to you? (*Please check any the following if you use them*)

	Frequency	%
Local newspapers/Newspaper Website	738	84.4
Word of mouth	558	64.7
Social media (e.g., Facebook, Twitter, Instagram)	284	32.9
TV/Radio	258	29.9
E-services (meeting announcements, agendas, news releases, newsletter, etc.)	198	22.9
Online searches (e.g., Google, Explorer, Safari, etc.)	154	17.8
Attend or watch local meetings (e.g., live web streams)	148	17.1
Social media, specifically Next Door App	45	5.2
I do not stay informed about Eagle County land use efforts	24	2.8
Other	11	1.3

About You

21. How old are you? _____ YEARS OLD (n = 807)

Age Categories	Frequency	%
18 – 29	40	5.0
30 – 39	86	10.7
40 – 49	120	14.9
50 – 59	177	21.9
60 – 69	210	26.0
70 – 79	137	17.0
80 – 89	35	4.3
90+	2	0.2

22. With what gender do you identify? *(Please write in your response below.)*

_____ (n = 806)

	Frequency	%
Male	382	47.4
Female	422	52.4
Gender Non-conforming/Non-binary	2	0.2

23. What is your current zip code? *(Please write-in five-digit number here.)* _____
(n = 783)

24. How would you describe your racial or ethnic background? *(Please check all that apply.)*

	Frequency	% (of Respondents)	2019 Census (n = 55,127)	% (of Eagle County)
American Indian or Native Alaskan	10	1.2	772	1
Asian	6	0.7	717	1
Black or African American	0	0	826	2
Hispanic/Latino	21	2.4	16,373	30
Native Hawaiian or other Pacific Islander	1	0.1	55	.1
White, non-Hispanic/Latino	723	83.8	52,095	95
Other	9	1.0		

*(*Hispanic Origin is considered a separate category from Race and is defined as **Hispanic or Latino** (29.7%) or **White alone, not Hispanic or Latino** (67.0%))*

25. What is your approximate annual household income? *(Please check one.)*

	Frequency	%
Less than \$20,000 per year	9	1.3
\$20,000 to \$39,999 per year	39	5.5
\$40,000 to \$59,999 per year	63	8.8
\$60,000 to \$79,999 per year	93	13.1
\$80,000 to \$99,999 per year	101	14.2
\$100,000 to \$149,999 per year	175	24.6
Over \$150,000 per year	232	32.6



(Photo credit: Rick Spitzer)