

Project Report

**Wildlife Viewing in Colorado:
A Review and Synthesis of Existing Data**

by

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for and in cooperation with

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A Review and Synthesis of Existing Data**

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Executive Summary

This report consolidates the findings from ten wildlife viewing studies conducted in Colorado between 1990 and 1996. The objectives are to: 1) synthesize what is currently known regarding wildlife viewing recreation, 2) provide an easy-to-use summary of wildlife viewing information to support planning, and 3) identify knowledge gaps which could facilitate wildlife viewing management.

Review of these existing reports reveals valuable information about Colorado residents' participation levels, interests, activities, and preferences related to wildlife viewing. This type of human dimensions information facilitates planning, implementing, and evaluating watchable wildlife-related programs and projects. This project report offers "Results" (highlights are below), followed by "Conclusions and Recommendations" to assist managers in applying this information. Based on knowledge gaps identified from review of this compilation, "Suggestions for Future Research" are also included.

- ***Watching wildlife is very important to Coloradans***

Colorado residents rate the quality of wildlife viewing in this state high compared to other states. They value wildlife viewing; almost all Coloradans report that one of the reasons they take trips to the outdoors is for the chance to see wildlife. Almost all residents also report they enjoy watching wildlife when they take a trip outdoors, enjoy seeing wildlife around their homes, and report that the wildlife they see is an important part of their community. Coloradans think it is important that residents have a chance to learn about the wildlife in the state.

- ***Over half of all study respondents report participation in wildlife viewing***

Across all studies, over half the respondents reported participation in wildlife viewing. Participation in wildlife viewing exceeded participation in hunting and fishing in all the studies examined. Studies conducted along the Front Range highlight the growing popularity of wildlife viewing. The percentage of Front Range study respondents who reported taking a wildlife viewing trip doubled between 1993 and 1995 (24% to 60%, respectively). Over three-quarters (77%) of Mt. Evans regional residents (residents located in an eight-county area surrounding Denver) participated in wildlife viewing in 1995. Bird watching, a specialized form of wildlife watching, was reported by 35% and 55% of all Coloradans from two studies (1990 and 1995, respectively).

- ***Interest in wildlife viewing is higher than actual participation. Coloradans express a great deal of interest in seeing certain species of wildlife and prefer to view wild animals in wild settings***

Interest in wildlife viewing is strong, and much higher than actual participation. Most Coloradans (83%) are interested in taking future recreational trips for which wildlife viewing is the primary purpose. They prefer opportunities where the chances of seeing wildlife are high, and there are few other people present. The majority of residents are interested in taking trips to designated wildlife viewing areas where there are short interpretive trails. Coloradans report an interest in seeing wildlife while camping, hiking, and driving through scenic areas.

Asking questions about the kinds of wildlife people are interested in viewing reveals information that can help guide managers in wildlife viewing programming. Over half of Coloradans express a great deal of interest in seeing deer, eagles, and elk; over a third express a great deal of interest in seeing a diversity of wildlife from birds to fish, fox to bighorn sheep. Most Coloradans and Denver Metro residents reported a preference for viewing wild animals in a wild setting. One potential way to measure success in wildlife viewing involves comparing interest in seeing a specific animal with the number of people that see it. Studies indicate there is generally more interest in seeing animals than actual success in seeing animals.

- ***Coloradans feel they do not have as much time to observe wildlife as they would like, and feel they do not know enough about viewing opportunities or where to look***

Since research indicates that interest in wildlife viewing is higher than participation, understanding the constraints that people perceive as preventing them from viewing wildlife can be valuable. The most frequently reported problems preventing people from viewing wildlife were not having enough time, not knowing about viewing opportunities, and not knowing where to look.

- ***Most Coloradans combine wildlife viewing with other activities***

To fully understand wildlife viewing participation rates, it is useful to review wildlife viewing in association with other activities. Coloradans often combine wildlife viewing with other outdoor recreation activities, enjoy watching wildlife while driving with their families, and enjoy watching wildlife close to home and in their backyards. A majority of Denver area residents report that they combine wildlife viewing with picnicking, camping, auto sightseeing and day hiking. Colorado residents also enjoy watching television programs and reading about wildlife. Between 1990 and 1995, participation in various wildlife viewing related activities has increased. Bird feeding, closely associated with viewing activities, appears to be growing in popularity; over half the respondents in a 1995 statewide study reported participation.

- ***Coloradans express interest in a number of different wildlife viewing recreation facilities***

Development of facilities can assist people in successfully viewing wildlife and increase their enjoyment of the activity. Most Coloradans report that undeveloped lands with dirt hiking trails, with or without wildlife interpretation signs, are desirable. Scenic overlooks, informational nature centers, and observation areas/blinds are also desired to help people observe and enjoy wildlife.

- ***Information about wildlife and viewing wildlife is obtained from a variety of sources***

Knowing where people seek wildlife-related information can help managers target their efforts. Television and newspapers, followed by friends and magazines, were reported in one study as the most widely used sources of information about wildlife by Colorado residents. With respect to wildlife viewing information, most Coloradans reported that brochures/pamphlets, wildlife watching field guides, checklists and maps, and newsletters were desired. The types of information reported to be most useful to Denver Metro residents were information about the best times and locations to view wildlife and the types of wildlife found in the area. Coloradans would be likely to change their plans for a variety of outdoor recreation activities (e.g., camping, hiking) if they had information about the kinds of wildlife they might see in a particular area at a specific time.

- ***Viewers differ in their interests and rates of participation***

Recognizing the diversity among wildlife viewing participants, some studies have attempted to classify viewers into more distinct subgroups. According to one wildlife viewer typology, the majority of Coloradans are "occasionalist" or "generalist" viewers who occasionally or sporadically take wildlife viewing trips, and who primarily enjoy wildlife viewing as a social outing or in association with other activities. Less than a quarter of the population might be classified as "highly involved" or "creative" wildlife viewers. These two viewer types are very active and interested in wildlife viewing, apt to volunteer to teach, and likely to invest dollars in their recreational pursuit.

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Introduction

Wildlife management has changed dramatically during the last twenty years. The client base served by fish and wildlife agencies is now considerably broader than solely consumptive users. According to a national survey, more people in the United States participate in non-consumptive activities such as wildlife viewing and wildlife photography than in hunting and fishing (U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce, Bureau of the Census, 1996). The 1996 United States Fish and Wildlife Service survey revealed that in Colorado, 1.5 million residents over 15 years old engaged in wildlife viewing, fishing, or hunting activities. Of the total number of participants, 1.2 million participated in activities where the viewing of wildlife was the primary purpose of the activity, whereas only 671,000 fished and 248,000 hunted. Wildlife viewing in this national survey included observing, feeding, and photographing wildlife. Another study in Colorado (Fulton, Manfredo & Sikorowski, 1993) suggests that wildlife viewers outnumber hunters by a ratio of 6 to 1, and anglers by a margin of 3 to 1. In recognition of this constituency, one goal of the Colorado Division of Wildlife (CDOW)'s Long-Range Plan (Colorado Division of Wildlife, 1994) is for the agency to "identify, develop, and provide the types of viewing opportunities most demanded by the public" (Goal 13.3).

To facilitate this goal, this report attempts to answer some basic questions using data from existing studies. For example, what is the current and potential demand for different types of wildlife viewing opportunities? What constitutes a satisfactory wildlife viewing experience for different subgroups of participants? These types of questions have been addressed in ten different CDOW funded studies since 1990 that have to some extent focused on wildlife viewing issues. A listing of these projects is presented in Appendix A.

This report consolidates the findings reported in these separate studies to find out what is currently known about wildlife viewing in Colorado. The objectives are to:

- synthesize the results of previous studies regarding wildlife viewing recreation
- provide an easy-to-use summary of wildlife viewing information to support planning
- identify knowledge gaps that could facilitate wildlife viewing management.

Because the ten studies examined here were concerned with different management issues and were conducted by a variety of investigators, question wording and response categories were not always identical. In addition, four surveys were mailed and six were conducted by telephone, a difference that can affect question wording and responses. The surveys were conducted between 1990 and 1996.

Two studies conducted by Standage Accureach, Inc. in 1990 investigated wildlife-related activities for the entire state of Colorado. One study compared participation in, and attitudes toward hunting, fishing and wildlife issues. The other examined attitudes about and participation in watchable wildlife recreation. The remaining eight studies were conducted by the Human Dimensions in Natural Resources Unit at Colorado State University (CSU). Three of these studies evaluated wildlife-associated beliefs and behaviors among residents across Colorado. Of these three, one was conducted in 1993 and concerned Coloradans' recreational uses of and attitudes toward wildlife, while the other two were completed in 1995 and investigated public attitudes toward trapping and agency methods of communicating with the Colorado public. The remaining five CSU studies were specific to different regions of the state and investigated public preferences for non-consumptive wildlife recreation in the Denver area (in 1991), attitudes toward urban wildlife in the South Suburban area of Denver (in 1995), attitudes about land use and wildlife in La Plata County (in 1996), public preferences for mountain lion management along Colorado's Front Range (in 1996), and recreation issues on Mt. Evans (in 1995).

Although these studies varied in focus and region of study, all had questions devoted to wildlife viewing. Eight topic areas were identified as sufficiently similar to permit comparisons. These include:

- Importance of wildlife viewing to Coloradans
- Wildlife viewing participation
- Interest and success in wildlife viewing
- Perceived constraints on wildlife viewing
- Activities associated with wildlife viewing
- Preferred wildlife viewing facilities
- Use of wildlife viewing information media
- Wildlife viewer types.

Review of these past reports reveals valuable information about Colorado residents' participation levels, interests, activities, and preferences related to wildlife viewing. This type of human dimensions information facilitates planning, implementing, and evaluating watchable wildlife-related programs and projects. "Conclusions and Recommendations" are offered in this project report to help managers apply this information. Based on knowledge gaps revealed in this compilation, "Suggestions for Future Research" are also presented.

Results

Importance of Wildlife Viewing to Coloradans

Wildlife viewing is important to Coloradans. Compared to other states, residents rate the quality of wildlife viewing high and value the activity relative to other recreational pursuits. Coloradans believe it is important to be able to take trips specifically to observe or photograph wildlife, and to enjoy wildlife while participating in other activities. The majority of Coloradans report that they enjoy watching wildlife when they take a trip outdoors, and seeing wildlife around their homes. They report that the wildlife they see is an important part of their community. Coloradans value and enjoy learning about wildlife, and think it is important that residents have a chance to learn about wildlife in the state.

A) *Quality of opportunities to view wildlife in Colorado*

The majority of Coloradans [Front Range (65%), East (58%), and West (75%)] rate the opportunities to view wildlife in Colorado much better than other states where they could consider living (Table 1).

Table 1. Quality of opportunities to view wildlife in Colorado

Compared to other places where you could consider living how would you rate the opportunities to view wildlife in Colorado?	Front Range 1993	East 1993	West 1993
Much better	65%	58%	75%
Slightly better	22	26	18
About the same	9	9	5
Much worse and slightly worse	3	5	1

Source: Fulton, Manfredo & Sikorowski (1993)

B) *Importance of wildlife viewing and related activities*

- Wildlife viewing is important to Coloradans. The majority of residents (71%) believe it is important to them to take trips specifically to participate in wildlife viewing activities (Table 2).
- Wildlife viewing-related activities are also important to most Coloradans. Ninety-four percent believe it is important to be able to enjoy wildlife while on trips planned primarily to do other activities.
- Experiencing wildlife vicariously is also important to Coloradans. Watching wildlife programs on TV and reading about wildlife is important to 87% of Coloradans.
- Watching wildlife on outdoor trips, as well as around their homes, is important to nearly all Coloradans (Table 3).
- Most Coloradans report that some of their most memorable outdoor experiences occurred when they saw wildlife they did not expect to see (95%) or saw wildlife do something they didn't expect (89%).
- Ninety-three percent of Coloradans agree that one of the reasons they take trips to the outdoors is for the chance to see wildlife.
- Coloradans are interested in making the area around their homes attractive to birds and wildlife (90%) and consider wildlife an important part of their community (92%).
- Learning more about wildlife is important to nearly all Colorado residents.

Table 2. Importance of wildlife viewing and related activities ^a

	Colorado 1993
Enjoying wildlife while on trips primarily to do other activities such as driving, skiing, or walking the woods.	94%
Watching wildlife programs on TV and reading about wildlife.	87
Taking trips specifically to photograph, feed, or observe birds or other wildlife	71

a. Cell entries are percent of respondents who reported that each activity is somewhat or very important.
Source: Fulton, Manfredo & Sikorowski (1993)

Table 3. Wildlife viewing-related statements ^a

	Colorado 1993
Statements related to wildlife viewing-related recreation	
I enjoy watching wildlife when I take a trip outdoors.	98%
Some of my most memorable outdoor experiences occurred when I saw wildlife I didn't expect to see.	95
Some of my most memorable outdoor experiences occurred when I saw wildlife do something I didn't expect.	89
One of the reasons I take trips to the outdoors, like camping, hiking or sightseeing, is for the chance to see wildlife.	93
Statements related to wildlife viewing near the home	
I enjoy seeing birds around my home	96
I notice the birds and wildlife around me every day.	97
Having wildlife around my home is important to me.	89
I'm interested in making the area around my home attractive to birds and wildlife.	90
An important part of my community is the wildlife I see there from time to time.	92
Statements related to wildlife-related education	
I enjoy learning about wildlife.	97
It is important that all Colorado residents have a chance to learn about wildlife in the state.	98
It is important that we learn as much as we can about wildlife.	97

a. Cell entries are the percent of respondents who slightly, moderately, and strongly agree with each statement.
Source: Fulton, Manfredo & Sikorowski (1993)

Wildlife Viewing Participation

Participation in wildlife viewing was examined in several statewide and regional Colorado studies. Two studies found that 56% of all Coloradans report taking trips in the past 12 months for which wildlife viewing was the primary purpose of the trip. It appears that participation in wildlife viewing varies somewhat in different geographical regions of the state. Bird watching was reported by 35% (in 1990) and 55% (in 1995) of Colorado residents in two different studies.

A) Statewide and regional participation in wildlife viewing, fishing, and hunting

- Across all studies, an average of 53% of respondents reported at least some participation in viewing wildlife during the survey year (Table 4).
- The 53% average for participation in wildlife viewing exceeded the average for participation in fishing (45%) and hunting (20%).
- In general, wildlife viewing participation appears to be increasing, especially along the Front Range. In 1993, 24% of Front Range residents reported taking a wildlife viewing trip, as compared to 60% in 1995 and 56% in 1996.

Table 4. Participation in wildlife viewing, fishing and hunting

Study	Wildlife viewing	Fishing	Hunting
All Colorado			
1995 ^{a,c}	56%	56%	22%
1990 ^{a,d}	56	37	14
Eastern Colorado			
1993 ^{a,e}	24	33	20
Front Range of Colorado			
1996 ^{b,g}	56	59	26
1995 ^{a,f}	60	31	11
1993 ^{a,e}	24	28	11
Denver South Suburban 1995 ^{b,h}	52	47	16
Denver 1996 ^{b,g}	51	51	18
Denver 1991 ^{a,i}	60	47	16
Colorado Springs 1996 ^{b,g}	51	58	24
Mt. Evans residents 1995 ^{a,k}	77	40	11
High Growth Mountain Areas of Colorado			
1995 ^{a,f}	59	46	22
Western Colorado			
1993 ^{a,e}	37	43	28
La Plata County 1996 ^{b,j}	75	66	36
Rural Colorado			
1995 ^{a,f}	63	42	24

- Cell entries are the % of respondents who participated in hunting or fishing or took trips specifically to view wildlife during the past 12 months. (Participation numbers (%) do not add up to 100% because people participate in more than one activity.)
- Cell entries are the percent of respondents who hunt or fish or take trips one mile or more from home specifically to watch wild animals or birds. (Participation numbers (%) do not add up to 100% because people participate in more than one activity.)
- Slater & Coughlon (1995)
- Standage Accureach, Inc. (1990b)
- Fulton, Manfredo & Sikorowski (1993)
- Fulton, Pate & Manfredo (1995)
- Zinn & Manfredo (1996)
- Wittmann, Vaske & Sikorowski (1995)
- Manfredo, Bright & Stephenson (1991)
- Layden & Manfredo (1996)
- Vaske, Wittmann, Laidlaw & Donnelly (1995)

B) *Participation in bird watching*

Participation in bird watching for Colorado residents has increased over time, from 35% in 1990 to 55% in 1995 (Table 5).

Table 5. Participation in bird watching

	Colorado 1990 ^a	Denver 1991 ^b	Colorado 1995 ^c	South Suburban Denver 1995 ^d	Mt. Evans Visitors 1995 ^e	Mt. Evans Residents 1995 ^e
Bird watched in the last year	35%	-	55%	21%	-	-
Bird watch on a regular basis	-	16%	-	-	-	-
Bird watching was at least slightly important to their visit to Mt. Evans	-	-	-	-	69%	78%
Average number of days spent bird watching in the last year	-	-	-	-	46 days	32 days

- a. Standage Accureach, Inc. (1990a)
- b. Manfredo, Bright & Stephenson (1991)
- c. Slater & Coughlon (1995)
- d. Wittmann, Vaske & Sikorowski (1995)
- e. Vaske, Wittmann, Laidlaw & Donnelly (1995)

Interest and Success in Wildlife Viewing

Interest in wildlife viewing is much higher than actual participation. Most Coloradans are interested in taking future recreational trips for which wildlife viewing is the primary purpose.

Coloradans report an interest in seeing wildlife while camping, hiking, and driving through scenic areas. Most people also report an interest in stopping to read signs along the highway about wildlife they might see while traveling, visiting locations to take unique wildlife photographs, and taking trips to visitor centers. Over half of all Coloradans report an interest in taking organized trips to view wildlife.

When asked about their interest in seeing specific animals, over half of Coloradans expressed a great deal of interest in seeing deer, eagles, and elk. Over a third expressed a great deal of interest in seeing a diversity of wildlife from birds to fish, fox to bighorn sheep.

Most Coloradans and Denver Metro residents prefer to see animals in wild settings (as opposed to in captivity). Visitors and regional residents of Mt. Evans prefer to see lots of different kinds of animals rather than lots of one kind of animal while at Mt. Evans.

One potential way to measure success in wildlife viewing involves comparing interest in seeing a specific animal with the number of people that see it. Studies indicate there is generally more interest in seeing animals than actual success in seeing animals. These findings are consistent across both the South Suburban open space and Mt. Evans studies.

A) Statewide and regional interest in wildlife viewing

A majority of Coloradans are interested in taking trips in the future to view wildlife (Table 6).

Table 6. Statewide and regional interest in wildlife viewing ^a

	Front Range 1993 ^c	East 1993 ^c	West 1993 ^c	Colorado 1995 ^{b,d}
Interest in taking recreational trips in the future for which wildlife viewing is the primary purpose	62%	55%	60%	83%

- Cell entries are percent of respondents who are slightly, moderately, and strongly interested.
- Cell entries are percent of respondents who said yes.
- Fulton, Manfredo & Sikorowski (1993)
- Slater & Coughlon (1995)

B) Statewide and regional interest in specific wildlife viewing experiences

- Colorado residents and visitors are extremely interested in seeing wildlife while driving through scenic areas, while camping, and while hiking (Table 7).
- Having the opportunity to take unique wildlife photographs and taking trips to designated wildlife viewing areas where there are short interpretive nature trails are very important aspects of wildlife viewing.
- Over 90% of Coloradans and Mt. Evans residents and visitors are interested in going to wildlife viewing locations where the chances of seeing wildlife are high, few people are present, but access is limited.
- Studying the behavior and habitat of wildlife is of interest to over 87% of Coloradans and Mt. Evans residents and visitors.

Table 7. Interest in wildlife viewing experiences ^a

Experiences in which you could:	Front Range 1993 ^b	East 1993 ^b	West 1993 ^b	Mt. Evans Residents 1995 ^c	Mt. Evans Visitors 1995 ^c
Go to wildlife viewing locations where the chances of seeing wildlife are high and few people are present	-	-	-	96%	97%
Go to wildlife viewing locations where the chances of seeing wildlife are high, few people are present but access is limited	91%	91%	92%	90	91
See wildlife while camping	96	97	96	-	-
Visit locations to take unique wildlife photographs	93	90	93	84	91
Take trips to visitor centers where there would be displays and photographs of wildlife	88	89	84	-	-
Study the behavior and habitat of wildlife	89	88	94	87	93
Take organized tours for viewing wildlife	73	77	58	64	61
Watch wildlife films or slide shows	-	-	-	66	69
<i>View Wildlife While Driving</i>					
See wildlife while driving	-	-	-	92	96
Drive through a scenic area and see wildlife	95	96	96	95	96
Stop to read signs along the highway about the wildlife you might see while traveling through an area, while en route to another location	90	89	84	-	-
Drive through areas that have radio transmitters placed along the highways that broadcast information about the local wildlife	73	78	77	64	65
<i>View Wildlife While Hiking</i>					
See wildlife while hiking	-	-	-	93	96
Take trips to designated wildlife viewing areas where there are short interpretive nature trails	95	94	96	93	94
Take short day hikes to view wildlife	93	89	91	-	-
Visit places where you have to walk for 30 minutes or more to reach a good location for viewing wildlife	93	86	94	-	-
Hike to remote areas to find good areas for viewing wildlife	-	-	-	82	91

a. Cell entries are percent of respondents who are slightly, moderately, and very interested in each experience.

b. Fulton, Manfredo & Sikorowski (1993)

c. Vaske, Wittmann, Laidlaw & Donnelly (1995)

C) *Interest in specific animals*

Asking questions about the kinds of wildlife in which people are interested and want to view reveals information that can help guide managers in wildlife viewing programming.

- Over half of Coloradans expressed a great deal of interest in seeing deer, eagles, and elk (Table 8).
- Over a third expressed interest in seeing a diversity of wildlife including birds (owls, hawks, songbirds), fish, ducks, fox, and wolves.
- Over a third of Coloradans also expressed interest in seeing big game animals, such as moose, bighorn sheep, mountain goats, mountain lions, bear, and pronghorn antelope.

Table 8. Interest in specific animals

	CO 1990 ^{ac}	Denver 1991 ^{bf}	Mt. Evans Visitors 1995 ^{cg}	Mt. Evans Residents 1995 ^{cg}	South Suburban Denver 1995 ^{dh}
Deer	56%	53%	53%	40%	42%
Golden eagles	53	76	69	69	52
Bald eagles	53	76	69	69	52
Elk	53	57	67	67	-
Moose	43	-	-	-	-
Bighorn sheep	41	67	75	54	-
Mountain goats	41	62	76	51	-
Mountain lions	40	-	-	-	-
Owls	39	-	-	-	-
Fox	38	-	-	-	43
Fish	38	-	-	-	-
Songbirds	37	47	37	27	-
Bear	36	-	-	-	-
Pronghorn antelope	36	-	-	-	-
Hawks	35	56	69	69	52
Wolves	34	-	-	-	-
Ducks	33	-	-	-	51
Bobcat	30	-	-	-	-
Pheasant	30	-	-	-	-
Raccoons	28	-	-	-	23
Geese	27	-	-	-	46
Squirrels	25	-	-	-	-
Chipmunks	25	-	-	-	-
Beaver	25	-	-	-	31
Rabbits, hares	23	-	-	-	-
Coyote	23	-	-	-	19
Wild turkey	22	-	-	-	-
Grouse	18	-	-	-	-
Snakes and turtles	15	-	-	-	-
Prairie chickens	15	-	-	-	-
Muskrat	12	-	-	-	-
Frogs and toads	8	-	-	-	-
Prairie dogs	-	12	-	-	16

- Cell entries are percent of respondents who have a great deal of interest in each animal.
- Cell entries are percent of respondents who feel each animal is very or extremely important when planning a wildlife viewing trip.
- Cell entries are percent of respondents who are strongly interested in seeing each animal during their visit to Mt. Evans.
- Cell entries are percent of respondents who are strongly interested in seeing each animal in South Suburban open spaces.
- Standage Accureach, Inc. (1990a)
- Manfredo, Bright & Stephenson (1991)
- Vaske, Wittmann, Laidlaw & Donnelly (1995)
- Wittmann, Vaske & Sikorowski (1995)

D) *Preferred wildlife viewing settings*

Seventy percent of Coloradans would prefer to observe wildlife in wild settings with only a chance of seeing wildlife rather than observing wildlife in enclosed parcels of land where the chances of seeing wildlife is greatly increased (Table 9).

Table 9. Preferred wildlife viewing settings

Which one of these two statements best describes how you would like to observe wildlife?	Colorado 1990
I would prefer to observe wildlife in wild settings with only a chance of seeing wildlife.	70%
I would prefer to observe wildlife in natural parcels of land enclosed by a wildlife-proof fence where I could almost definitely see wildlife. This would not be a zoo or game farm enclosure.	30

Source: Standage Accureach, Inc. (1990a)

E) *Importance of specific wildlife viewing opportunities to Denver Metro residents*

- Seventy-seven percent of Denver Metro residents believe it is very or extremely important to them to have the opportunity to see animals in the wild (as opposed to in captivity) when deciding to take a trip to view wildlife (Table 10).
- Seeing rare or endangered species is also very or extremely important to 75% of Denver residents when planning a wildlife viewing trip.
- Learning about animals in museums and seeing animals at zoos is very or extremely important to 29% of Denver metro residents.

Table 10. Importance of specific wildlife viewing opportunities to Denver Metro residents ^a

Opportunity to:	Denver 1991
See animals that are “in the wild”	77%
See rare or endangered species	75
See many different animals at once	71
See animals which are native to Colorado	68
See animals from around the world	49
Learn about animals in museums	29
See animals at zoos	29

a. Cell entries are percent of respondents who think each item is very or extremely important when planning a wildlife viewing trip.

Source: Manfredo, Bright & Stephenson (1991)

F) *Wildlife viewing preferences at Mt. Evans*

- Visitors and regional residents of Mt. Evans prefer to see lots of different kinds of animals rather than lots of one kind of animals (85% and 89%, respectively) (Table 11).
- Over a third of Mt. Evans visitors (36%) and residents (45%) prefer to get as close to the animals as possible when watching wildlife.
- Thirty-one percent of visitors and 26% of residents at Mt. Evans do not mind seeing many people as long as they see a lot of wildlife.

Table 11. Wildlife viewing preferences at Mt. Evans ^a

	Mt. Evans Visitors 1995	Mt. Evans Residents 1995
I would rather see lots of <i>different</i> kinds of animals than lots of one kind of animal at Mt. Evans	85%	89%
I visit Mt. Evans to watch wildlife.	74	65
The number of animals I see is not important as long as I see <i>some</i> wildlife.	57	54
Seeing lots of animals, regardless of the number of different kinds, is most important.	46	54
I prefer to get as close to the animals as possible when watching wildlife.	36	45
I don't mind seeing many people if I see a lot of wildlife.	31	26
I primarily visit Mt. Evans to watch only one kind of animal.	2	2

a. Cell entries are percent of respondents who reported that each activity is somewhat or very important.
Source: Vaske, Wittmann, Laidlaw & Donnelly (1995)

G) *Success in viewing wildlife*

One potential way to measure success in wildlife viewing involves comparing interest in seeing a specific animal with the number of people that see it.

- Studies indicate there is generally more interest in seeing animals than actual success in seeing animals. These findings are consistent across both the South Suburban open space and Mt. Evans studies (Tables 12 and 13).

Table 12. Wildlife interest and viewing success in South Suburban open spaces

Animals	Interested ^a	Seen at least once ^b
Eagles or hawks	87%	69%
Ducks	87	91
Geese	84	91
Deer	84	52
Foxes	83	75
Beavers	74	25
Raccoons	67	45
Coyotes	55	33
Prairie dogs	46	78

a. Cell entries are percent of respondents who are somewhat, moderately, or strongly interested in each animal.

b. Cell entries are percent of respondents who have seen each animal at least once in South Suburban open spaces.

Source: Wittmann, Vaske & Sikorowski (1995)

Table 13. Wildlife interest and viewing success at Mt. Evans

	Interested		Seen at least once ^b
	Mt. Evans Visitors ^a	Mt. Evans Residents ^a	
Mountain goats	76%	51%	46%
Bighorn sheep	75	54	27
Eagles or hawks	69	58	17
Elk	67	50	6
Deer	53	40	10
Marmots or pikas	50	30	39
Ptarmigan	49	39	2
Small birds	37	27	51

a. Cell entries are percent of respondents who are strongly interested in observing each animal.

b. Cell entries are percent of respondents who saw each animal during their visit to Mt. Evans.

Source: Vaske, Wittmann, Laidlaw & Donnelly (1995)

Perceived Constraints on Wildlife Viewing

Research indicates that interest in wildlife viewing is higher than participation, suggesting the need to understand what constrains people from viewing wildlife. When presented with a list of possible constraints, a majority of Coloradans from two studies (70% in 1990 and 65% in 1995) reported that not having enough time is a problem preventing them from viewing wildlife more often. The second most frequently reported problem was not knowing about wildlife viewing opportunities (39% in 1990 and 27% in 1995). Fewer people in the 1995 study reported perceiving the listed constraints as a problem than in the 1990 study.

A) Coloradans' perceived constraints to wildlife viewing

- Most Coloradans (70% in 1990 and 65% in 1995) feel they “don’t have enough time” to observe wildlife as much as they would like to (Table 14).
- The second most frequently reported problem for Coloradans was that they “don’t know what is out there in the way of wildlife opportunities” (39% in 1990 and 27% in 1995).
- Thirty-four percent in 1990 and 20% in 1995 reported they “don’t know where to look” to view or observe wildlife.
- In 1990, 32% of respondents (and 25% in 1995) feel that they were prevented from viewing wildlife more often because they are “concerned that there will be other people with different interests out at the same time (they) are trying to observe wildlife”.
- In 1995, fewer study participants reported perceiving these specific constraints as a problem than in 1990.

Table 14. Coloradans' perceived constraints to wildlife viewing ^a

	Colorado 1990 ^b	Colorado 1995 ^c
I just don't have enough time	70%	65%
I just don't know what's out there in the way of wildlife opportunities	39	27
I don't know where to look	34	20
I'm concerned that there will be other people with different interests out at the same time I am trying to observe wildlife	32	25
I would have to travel too far from home to get to wildlife areas	30	18
I don't have enough money to visit the areas necessary to observe wildlife	29	23
The facilities, such as trails, etc., are not adequate	26	18
Most of my friends and/or family aren't interested in observing wildlife	22	19
I have a physical problem that makes it hard for me to get around	13	11
I don't have any means of transportation to get to wildlife areas	11	6

a. Cell entries are percent of respondents who see each item as being a somewhat or great problem preventing them from viewing or observing wildlife more often.

b. Standage Accureach, Inc. (1990a)

c. Slater & Coughlon (1995)

Activities Associated with Wildlife Viewing

Wildlife viewing participation is typically measured as "taking a trip a mile or more from home for which wildlife viewing is the primary purpose". But Coloradans often combine wildlife viewing with other activities and watch wildlife close to home. Reviewing information regarding these combined and related activities is important to fully understanding both rates of participation and recreational desires.

Between 1990 and 1995, participation in various wildlife viewing related activities has increased. Most Coloradans report that they enjoy the presence of wildlife while they pursue other recreational activities and while driving in the car. The majority of Colorado residents also enjoy watching television programs and reading about wildlife. Also, a majority of Denver residents report that they would combine wildlife viewing with picnicking, camping, auto sightseeing and day hiking.

In 1990, 35% of Coloradans reported feeding wild birds, as did 59% in 1995. For the same two years, fewer people reported feeding wildlife other than birds. The Mt. Evans study revealed mixed perceptions of the importance and acceptability of feeding wildlife. Few Mt. Evans residents and visitors reported that it was "okay" to feed wild animals, and about two-thirds perceived people feeding wildlife on Mt. Evans as a problem, but 42% of residents and 19% of visitors reported that feeding wildlife was at least a slightly important reason for them to visit Mt. Evans.

A) Participation in wildlife viewing related activities

- Participation in various wildlife viewing related activities has increased between 1990 and 1995 (Table 15).
- A majority of Coloradans enjoy the presence of wildlife while they pursue other recreational activities (80%, 91%) and while driving in their car (78%, 91%).
- The majority of Coloradans also enjoy watching television (84%, 90%) and reading about wildlife (59%, 76%).

Table 15. Participation in wildlife viewing related activities

	Colorado 1990 ^{a,c}	Colorado 1995 ^{b,d}
Watching nature programming on TV	84%	90%
Enjoying the presence of wildlife during some other activity such as skiing, picnicking, bicycling, walking, etc.	80	91
Looking at wildlife while driving in the car	78	91
Reading about wildlife	59	76
Observing wildlife other than birds	52	85
Wildlife photography	20	33
Landscaping for wildlife around your home	15	39
Observing wildlife in your backyard	-	72
Taking trips specifically to observe wildlife in a natural setting	-	57

a. Cell entries are percent of respondents who participated in each activity during the last year.

b. Cell entries are percent of respondents who occasionally or frequently participated in each activity during the last year.

c. Standage Accureach, Inc. (1990a)

d. Slater & Coughlon (1995)

B) *Activities combined with wildlife viewing for Denver Metro residents*

- A majority of Denver residents (over 70%) reported that they would combine wildlife viewing with picnicking, camping, auto sightseeing and day hiking (Table 16).
- Wildlife viewing is less often combined with hunting, skiing activities, and mountain climbing.

Table 16. Activities combined with wildlife viewing for Denver Metro residents ^a

	Denver 1991
Picnicking	78%
Camping	77
Auto sightseeing	76
Day hiking	74
Photography	61
Fishing	53
Boating	48
Horseback riding	42
Bicycling	39
Off-road vehicle use	39
Nature study	38
Overnight backpacking	36
Mountain climbing	30
Cross-country skiing	29
Downhill skiing	27
Hunting	17

a. Cell entries are percent of respondents who would combine each type of activity with a trip taken to view wildlife.

Source: Manfredo, Bright, & Stephenson (1991)

C) *Feeding wildlife*

- Thirty-five percent of Coloradans in 1990 and 59% in 1995 fed wild birds in the survey year (Table 17).
- Fewer people reported feeding wildlife other than birds, 17% of Colorado residents in 1990 and 28% in 1995.
- While few Mt. Evans visitors and regional residents find it “okay” to feed wild animals, they find it more acceptable to feed smaller animals, such as marmots and chipmunks, than larger animals, such as deer and elk (Table 18).
- Almost two-thirds of Mt. Evans visitors and residents perceive people feeding wildlife on Mt. Evans as a problem.
- Forty-two percent of Mt. Evans residents and 19% of visitors report that feeding wildlife was at least a slightly important reason for their visit to Mt. Evans.

Table 17. Participation in feeding wildlife

	Colorado 1990 ^{a,c}	Colorado 1995 ^{b,d}
Fed wild birds	35%	59%
Fed wildlife other than birds	17	28

- a. Cell entries are percent of respondents who participated in each activity during the last year.
 b. Cell entries are percent of respondents who occasionally or frequently participated in each activity during the last year.
 c. Standage Accureach, Inc. (1990a)
 d. Slater & Coughlon (1995)

Table 18. Importance and acceptability of feeding wildlife on Mt. Evans

	Mt. Evans Visitors 1995	Mt. Evans Residents 1995
It is okay to feed small animals such as marmots and chipmunks ^a	15%	18%
It is okay to feed large animals such as deer, goats, elk, and sheep ^a	8	10
People feeding wildlife on Mt. Evans is a problem ^b	62	61
Importance of feeding wildlife as a reason to visit Mt. Evans ^c	19	42

- a. Cell entries are percent of respondents who somewhat or strongly agree with each statement.
 b. Cell entries are percent of respondents who think feeding wildlife is a slight, moderate, or extreme problem on Mt. Evans.
 c. Cell entries are percent of respondents who report that the activity is a slightly, moderately, or very important reason for visiting Mt. Evans.

Source: Vaske, Wittmann, Laidlaw & Donnelly (1995)

Preferred Wildlife Viewing Facilities

Development of different recreational facilities may help people to successfully view wildlife and increase their enjoyment of the activity. In general, Coloradans prefer “undeveloped” types of places with dirt hiking trails for viewing wildlife. Most Coloradans rated both undeveloped dirt trails without signs (81%) and with wildlife oriented signs (80%) as desirable. A similar percentage of Coloradans believe scenic overlooks (83%) and informational nature centers (81%) are desirable to help people observe and enjoy wildlife. In a 1990 study, 87% of Coloradans believed the CDOW should increase recreational opportunities, such as bird and wildlife viewing sites or observation towers for the public.

A) Coloradans’ desired level of development for wildlife viewing areas

- Eighty-five percent of Coloradans prefer “undeveloped” types of places for viewing wildlife (Table 19).
- Among those who preferred undeveloped hiking areas, the majority (54%) prefer undeveloped areas with dirt hiking trails over completely undeveloped areas (37%).

Table 19. Coloradans’ desired level of development for wildlife viewing areas

	Developed versus undeveloped viewing areas ^a	Breakdown ^b
Undeveloped	85%	
With dirt hiking trails	-	54%
Completely undeveloped	-	37
Doesn’t matter	-	9
Developed	8	
Doesn’t matter	7	

a. “Would you prefer to observe wildlife on undeveloped lands where nature takes its course, or would you prefer more developed lands with buildings, towers, blinds, paved trails, etc.?”

b. If undeveloped, “Would you prefer completely undeveloped wildlife lands, or would you prefer wildlife lands with dirt hiking trails?”

Source: Standage Accureach, Inc. (1990a)

B) *Desirability of wildlife viewing facility alternatives*

- Most Coloradans believe scenic overlooks (83%) and informational nature centers (81%) are desirable to help people observe and enjoy wildlife (Table 20).
- A similar percentage of Coloradans rated both undeveloped dirt trails without signs (81%) and with wildlife oriented signs (80%) as desirable.
- Observation or photography blinds are desirable to 71% of Colorado residents, as well as 44% of visitors to Mt. Evans, and 39% of Mt. Evans residents.
- Eighty-seven percent of Coloradans believe the CDOW should increase wildlife viewing sites (Table 21).

Table 20. Desirability of wildlife viewing facility alternatives ^a

	Colorado 1990 ^b	Mt. Evans Residents 1995 ^c	Mt. Evans Visitors 1995 ^c
Scenic overlooks	83%	-	-
Informational nature centers	81	-	-
Undeveloped dirt trails, with no signs	81	33%	44%
Undeveloped dirt trails, with wildlife oriented signs	80	56	63
Observation/photography blinds	71	39	44
Self-guided trails with interpretive cassettes	66	30	34
Observation towers from which you could view wildlife, ponds, etc.	60	-	-
Self-guided auto tours with interpretive cassettes	47	27	31
Paved hiking trails, with wildlife oriented signs	45	38	35
Signs describing wildlife	-	58	61
Developed observation areas for viewing wildlife	-	57	58
Pull-offs where I can watch wildlife without getting out of my car	-	49	54
Paved hiking trails, with no signs	-	18	12
No trails	-	14	14

a. Cell entries are percent of respondents who feel each alternative is somewhat or very desirable to help them observe wildlife.

b. Standage Accureach, Inc. (1990a)

c. Vaske, Wittmann, Laidlaw & Donnelly (1995)

Table 21. Desirability of increased wildlife viewing facilities

The Division of Wildlife should increase recreational opportunities, such as bird and wildlife viewing sites or observation towers for the public?	Colorado 1990
Strongly or moderately agree	86%
Neutral	4
Strongly or moderately disagree	10

Source: Standage Accureach, Inc. (1990b)

Use of Wildlife Viewing Information Media

Knowing what media people are likely to use can help managers target their wildlife viewing information efforts. In one study, Colorado residents' most widely used sources of information about wildlife were television and newspapers, followed by friends and magazines.

With respect to wildlife viewing information, most Coloradans reported that brochures and pamphlets, field guides, wildlife checklists and maps, and newsletters would help them observe wildlife and increase their enjoyment of the activity. The types of wildlife viewing information reported to be most useful to Denver residents were information about the best times and locations to view wildlife and the types of wildlife found in the area. Information about wildlife viewing opportunities is important enough to Coloradans to change their plans for a variety of outdoor recreation activities, including nature study, backpacking, day hiking, photography, and camping.

A) Coloradans' sources of wildlife information

- In 1995, the majority (over 75%) of Coloradans obtained wildlife information from television, newspapers, friends, and magazines (Table 22).

Table 22. Coloradans' wildlife information sources ^a

	Colorado 1995
Television	95%
Newspapers	88
Friends	79
Magazines	78
Books	72
Family	71
Museum/zoo exhibits	71
Outdoor recreation/sporting goods stores	57
Radio	55
Publications of CDOW (i.e. Colorado Outdoors)	44
Publications of conservation organizations	44
Wildlife professionals	43
Home videos	35
Exhibitions/trade shows	34
Employees of CDOW	27

a. Cell entries are percent of respondents who obtain information about wildlife from each source.
Source: Slater & Coughlon (1995)

B) Preferred wildlife viewing information sources

- Most Coloradans prefer to obtain wildlife viewing information from brochures and pamphlets, field guides, checklists and maps, and newsletters (Table 23).
- Informational telephone numbers to call for wildlife viewing information and personal interpretation such as guided tours with naturalists are also relatively important to Coloradans.

Table 23. Preferred wildlife viewing information sources ^a

	Colorado 1990 ^b	Mt. Evans Visitors 1995 ^c	Mt. Evans Residents 1995 ^c	Denver 1991 ^d
Information brochures/pamphlets	84%	72%	67%	
-Send away for brochures about wildlife	-	-	-	64%
-Pick up brochures at visitor centers	-	-	-	91
Wildlife watching field guide with information as to where, when and how to observe wildlife	77	-	-	72
Wildlife checklists and maps	74	68	59	69
Newsletter with wildlife viewing opportunities	72	56	47	-
Informational telephone numbers to call for wildlife viewing information	69	-	-	-
Guided tours with naturalists	62	46	40	72
Films or slide shows about local wildlife	-	40	30	-

a. Cell entries are percent of respondents who feel each source is somewhat or very desirable to help them observe wildlife.

b. Standage Accureach, Inc. (1990a)

c. Vaske, Wittmann, Laidlaw & Donnelly (1995)

d. Cell entries are percent of respondents who are slightly, quite or extremely likely to obtain information about wildlife from each source. Source: Manfredo, Bright & Stephenson (1991)

C) Preferred types of wildlife viewing information for Denver Metro residents

Over 75% of Denver residents find the most useful types of information to be the best times and locations to view wildlife and the types of wildlife which can be seen in the region (Table 24).

Table 24. Preferred types of wildlife viewing information for Denver Metro residents ^a

	Denver 1991
The best times to view wildlife	77%
The best locations to view wildlife	76
The types of wildlife which can be seen throughout the region	75
How to be most successful in viewing wildlife	72
The habits of wildlife	69
Threatened and endangered species in Colorado	67
The natural history of wildlife species	54
Colorado's wildlife management activities	47

a. Cell entries are percent of respondents who would find each type of information very or extremely useful.
Source: Manfredo, Bright & Stephenson (1991)

D) *Likelihood of Coloradans adjusting plans when wildlife viewing information is available*

Approximately half of Coloradans would be very likely to alter plans to study nature (53%), backpack (52%), and day hike (50%) if they had information about the kinds of wildlife they might see in a particular area at a specific time (Table 25).

Table 25. Likelihood of Coloradans adjusting plans when wildlife viewing information is available ^a

	Colorado 1990
Study nature	53%
Go backpacking	52
Go hiking	50
Take photographs	47
Go camping	45
Go sight-seeing by automobile	44
Go horseback riding	43
Take off-road vehicle travel trails	42
Go mountain climbing	41
Go picnicking	37
Go boating	36
Go bicycling	30
Go cross-country skiing	23
Go downhill skiing	19

- a. How likely would you be to adjust when and where you _____ if you had information about the kinds of wildlife you might see if you _____ in a particular area at a specified time? (Percent reported is very likely)

Source: Standage Accureach, Inc. (1990a)

Wildlife Viewer Types

Recognizing the diversity in interests and participation rates that exist with respect to wildlife viewing, some studies have classified viewers into more distinct subgroups. The following section describes one such wildlife viewer typology, and also presents the results of using this typology from three different studies.

Wildlife Viewer Typology

Using a sample of Denver Metro area residents, Manfredo and associates (Manfredo, Bright, & Stephenson, 1991; Manfredo & Larson, 1993), cluster analyzed respondents' motivations for participating in wildlife viewing. Four viewer categories emerged: highly involved, creative, generalist, and occasionalist. These four "experience" types were found to differ with respect to a variety of variables, including the activities they would combine with wildlife viewing, the types of settings in which viewing would occur, how viewing could be managed, and constraints to participation in wildlife viewing. Based on these findings, descriptions were developed for each of the four wildlife viewer types (Table 26).

Since the 1991 study mentioned above, the wildlife viewer typology described in Table 26 (using the four viewer categories of: highly involved, creative, generalist, and occasionalist) has since been used in two other Colorado studies in an attempt to further explore the utility of these wildlife viewer types. Fulton, Manfredo & Sikorowski (1993) used the typology with a statewide population of Colorado residents. Vaske, Wittmann, Laidlaw & Donnelly (1995) also used the typology with Mt. Evans regional residents and on-site visitors.

Table 26. Wildlife viewer typology

Type	Classification
Highly Involved	Type 1 is a person who is highly interested in wildlife viewing. They take several wildlife viewing trips throughout the year and they enjoy opportunities to study wildlife and wildlife behavior and opportunities to teach and lead others.
Creative	Type 2 is a person who is also very active and interested in wildlife. What they value most highly is the opportunity to photograph, paint or sketch wildlife. These people often have a high investment in equipment, such as camera gear.
Generalist	Type 3 is a person with a general interest in seeing and learning more about wildlife. They take trips to see wildlife sporadically throughout the year and do so to have a change of pace, to get out with friends or family, or just to see new scenery.
Occasionalist	Type 4 is a person who has a slight level of interest in trips specifically to view wildlife. Only occasionally do they take wildlife viewing trips. The primary means by which they enjoy wildlife is when it is associated with other types of activities such as auto-driving, camping, walking, or fishing.

Source: Fulton, Manfredo & Sikorowski (1993)

A) *Percentages of wildlife viewer types*

- Using this typology, the majority of Coloradans are "occasionalist" or "generalist" viewers who sporadically take wildlife viewing trips and who primarily enjoy wildlife viewing as a social outing or in association with other activities (Table 27).
- Depending on the study, between 6% and 22% of the respondents were considered "highly involved" wildlife viewers. These viewers take several wildlife viewing trips throughout the year and enjoy opportunities to study wildlife and wildlife behavior and/or opportunities to teach and lead others.
- The "creative" wildlife viewer group was consistently the smallest group, but did emerge in all studies. This type of individual values the artistic opportunity to photograph, paint or sketch wildlife. They often have a high investment in equipment, such as camera gear.

Table 27. Wildlife viewer types ^a

	Denver 1991 ^{bc}	Front Range 1993 ^d	East 1993 ^d	West 1993 ^d	Mt. Evans Visitors 1995 ^e	Mt. Evans Residents 1995 ^e
Highly Involved	22%	6%	6%	17%	11%	8%
Creative	15	5	5	8	8	4
Generalist	32	35	34	39	38	34
Occasionalist	31	53	53	35	40	45

- Simple classification ("Which type of individual describes your wildlife viewing interests?" Respondent answers the question after reading or hearing the four different descriptions).
- Researcher classified (Classified by cluster analysis of experience preference items).
- Manfredo, Bright & Stephenson (1991)
- Fulton, Manfredo & Sikorowski (1993)
- Vaske, Wittmann, Laidlaw & Donnelly (1995)

B) *Motivations by wildlife viewer types for visiting Mt. Evans*

- In the Mt. Evans study, highly involved and creative viewers are motivated primarily to view wildlife and scenery (Table 28).
- A high proportion of respondents in the creative viewer group were more motivated by artistic aspects of wildlife viewing than the other three groups.
- The most common motivation for generalist and occasionalist viewers is to view scenery.

Table 28. Motivations by wildlife viewer types for visiting Mt. Evans ^a

How important to you is each of the following reasons for visiting Mt. Evans?	Highly Involved	Creative	Generalist	Occasionalist
To view wildlife	66%	56%	30%	14%
To view scenery	40	56	46	37
To study nature	40	34	18	9
To participate in natural processes	33	31	15	9
To be on your own	33	18	11	15
To develop your skills & abilities	26	11	5	9
To be with friends	16	8	12	9
To teach your outdoor skills to others	16	6	2	3
To do something creative, such as sketch, paint or take photographs	10	33	4	4

- Cell entries are percent of respondents rating each reason for visiting Mt. Evans as extremely important. Source: Vaske, Wittmann, Laidlaw & Donnelly (1995)

C) *Self-reported skill levels and days of participation by wildlife viewer types at Mt. Evans*

- In the Mt. Evans study, self-reported skill levels for wildlife viewing, bird watching, and wildlife photography are highest for highly involved and creative viewer types (Table 29).
- Creative viewer types report a higher skill level in wildlife photography than do highly involved viewers.
- Days of participation for wildlife viewing are highest for highly involved viewers as compared to the other three groups (Table 30).
- Across all groups, days of participation are highest for wildlife viewing as opposed to bird watching or wildlife photography.

Table 29. Self-reported skill levels for selected activities at Mt. Evans, by wildlife viewer types ^a

Activity:	Highly Involved	Creative	Generalist	Occasionalist
Wildlife viewing	77%	53%	30%	22%
Bird watching	20	14	2	2
Wildlife photography	28	47	10	6

a. Cell entries are percent of respondents rating themselves as “advanced” or “expert”.
Source: Vaske, Wittmann, Laidlaw & Donnelly (1995)

Table 30. Self-reported days of participation in selected activities at Mt. Evans, by wildlife viewer types ^a

Days of participation in:	Highly Involved	Creative	Generalist	Occasionalist
Wildlife viewing	44.4 days	34.2 days	23.9 days	15.4 days
Bird watching	26.7	25.1	20.1	5.1
Wildlife photography	13.5	17.1	6.3	3.3

a. Cell entries are the average number of days participating in each activity.
Source: Vaske, Wittmann, Laidlaw & Donnelly (1995)

D) *Equipment owned by wildlife viewer types at Mt. Evans*

Another way to measure commitment to an activity is by looking at people's investment in equipment (measured either by amount of equipment owned by respondents or the amount of money spent on equipment).

- In the Mt. Evans study, nearly all members of each wildlife viewer type own cameras and binoculars (Table 31).
- In general, highly involved and creative viewers own more equipment than generalists or occasionalists. Also, more specialized equipment is owned by highly involved and creative viewers.
- The average dollar value of equipment owned for wildlife viewing is highest for highly involved viewers (Table 32).
- The average dollar value of equipment owned for photography is highest for creative viewers.

Table 31. Equipment owned by wildlife viewer types at Mt. Evans ^a

Equipment owned:	Highly Involved	Creative	Generalist	Occasionalist
Camera	98%	98%	98%	98%
Camera tripod	72	83	56	50
Telephoto lens	70	91	64	53
Wide angle lens	56	74	42	42
Field guides	70	60	54	36
Binoculars	97	91	86	87
Spotting scopes	65	34	24	28
Portable blinds	17	12	6	8
Calls or attractants	65	37	26	29
Camouflage clothing	74	40	30	36
Average number of pieces of equipment owned	6.8	6.1	4.9	4.7

a. Cell entries are percent of respondents who own each type of equipment.

Source: Vaske, Wittmann, Laidlaw & Donnelly (1995)

Table 32. Average dollar value of equipment owned by wildlife viewer types at Mt. Evans ^a

Average dollar value of:	Highly Involved	Creative	Generalist	Occasionalist
Wildlife viewing equipment	\$627	\$585	\$300	\$238
Photography equipment	\$1130	\$1732	\$897	\$783

a. Respondents were asked, "What is the value of your equipment for the following activities?"

Source: Vaske, Wittmann, Laidlaw & Donnelly (1995)

E) *Interest in wildlife viewing experiences by wildlife viewer types at Mt. Evans*

- In the Mt. Evans study, about 70% of highly involved viewers are interested in studying the behavior and habitat of wildlife and seeing wildlife while hiking (Table 33).
- Among creative viewers, 78% are very interested in taking unique wildlife photographs.
- Interest is highest for generalist and occasionalist viewers in going to places where the chances of seeing wildlife are high and few people are present.

Table 33. Interest in wildlife viewing experiences at Mt. Evans, by wildlife viewer types ^a

Experiences in which you could:	Highly Involved	Creative	Generalist	Occasionalist
Study the behavior and habitat of wildlife	75%	56%	33%	15%
See wildlife while hiking	69	69	56	40
Go to wildlife viewing locations where the chances of seeing wildlife are high and few people are present	65	72	60	46
Hike to remote areas to find good areas for viewing wildlife	64	59	40	27
Go to wildlife viewing locations where the chances of seeing wildlife are high, few people are present but access is limited	52	48	36	29
Visit locations to take unique wildlife photographs	43	78	30	13
Take trips to designated wildlife viewing areas where there are short interpretive nature trails	28	41	35	24
Watching wildlife films or slide shows	12	13	7	4

a. Cell entries are the percent of respondents rating each statement as very interested.

Source: Vaske, Wittmann, Laidlaw & Donnelly (1995)

F) *Management action preferences by wildlife viewer types at Mt. Evans*

- Highly involved viewers most prefer no trails (29%) and undeveloped dirt trails with no signs (26%) (Table 34).
- Creative viewer types, on the other hand, most prefer wildlife checklists and maps (41%).
- The most preferred management action alternatives for generalist and occasionalist viewers are to have wildlife checklists and maps (22% and 16%, respectively), and information brochures/pamphlets (24% and 15%, respectively).

Table 34. Management action preferences at Mt. Evans, by wildlife viewer types ^a

Management Action Preferences	Highly Involved	Creative	Generalist	Occasionalist
No trails	29%	17%	7%	9%
Undeveloped dirt trails, with no signs	26	22	17	14
Wildlife checklists and maps	23	41	22	16
Information brochures/pamphlets	19	25	24	15
Newsletter with wildlife viewing opportunities	15	27	21	9
Films or slide shows about local wildlife	14	14	9	7
Undeveloped dirt trails, with wildlife oriented signs	13	19	21	16
Signs describing wildlife	11	13	12	10
Developed observation areas for viewing wildlife	11	17	16	12
Guided tours with naturalists	9	14	11	5
Paved hiking trails, with wildlife oriented signs	8	11	11	8
Pull-offs where I can watch wildlife without getting out of my car	7	13	15	15
Observation/photography blinds	6	28	12	9
Self-guided trails with interpretative cassettes	5	8	6	5
Self-guided auto tours with interpretative cassettes	3	6	6	7
Paved hiking trails, with no signs	1	5	3	1

a. Cell entries are percent of respondents rating each opportunity as very desirable.

Source: Vaske, Wittmann, Laidlaw & Donnelly (1995)

G) Constraints to wildlife viewing for Denver Metro residents, by wildlife viewer types

- Across all viewer types for Denver Metro residents, the most common perceived constraints were not having enough money (12% to 26%) and not knowing where to go (22% to 36%) (Table 35).
- For the highly involved viewers, the most reported restrictions were cost (26%), not knowing good places to go (22%) and crowding (22%).
- For both the creative and generalist viewer, only one constraint, not knowing good places to go, was reported by over one-fifth of the respondents (24% and 23%, respectively).
- For the occasionalist viewer, not knowing good places to go (36%) and not knowing enough about the activity (20%) were the most reported restrictions. Only 12% of these respondents reported that cost was a constraint.

Table 35. Constraints to wildlife viewing for Denver Metro residents, by wildlife viewer types ^a

	Highly Involved	Creative	Generalists	Occasionalists
It takes too much money	26%	18%	14%	12%
I don't know good places to go	22	24	23	36
Wildlife areas are crowded with people	22	14	8	10
It takes too much time	16	9	8	17
It isn't that interesting to me	16	11	11	13
There's enough wildlife to view near home	16	4	9	11
I don't know enough about the activity	11	4	4	20
Places to view wildlife are too far away	10	15	3	12
I have no one to go with	8	4	5	10
It's too unpredictable	4	11	5	10
I can watch wildlife programs on TV instead	4	0	4	5

a. Cell entries are percent of respondents who feel each item is very or extremely restrictive in terms of their participation in wildlife viewing.

Source: Manfreda, Bright & Stephenson (1991)

H) *Sources of wildlife viewing information used by Denver Metro residents, by wildlife viewer types*

- For Denver Metro residents, the most popular sources of information across all viewer types are picking up brochures found at visitor centers (89% to 96%), visiting designated wildlife viewing areas to view wildlife (86% to 96%), reading signs placed along trails (90% to 96%), taking a hike on wildlife viewing trails (84% to 95%), and stopping at visitor centers at wildlife viewing locations (88% to 94%) (Table 36).
- Compared to the other viewer types, creative viewers are the most likely to take personal guided tours (83%).

Table 36. Sources of wildlife viewing information used by Denver Metro residents, by wildlife viewer types ^a

	Highly Involved	Creative	Generalists	Occasionalists
Pick up brochures at visitor centers	96%	89%	90%	89%
Visit designated wildlife viewing areas to view wildlife	96	94	90	86
Stop to read signs placed along trails	96	91	95	90
Take a hike on wildlife viewing trails	95	93	95	84
Stop at visitor centers at wildlife viewing locations	94	89	90	88
Obtain wildlife watching field guides	84	83	67	61
Send away for maps about places to view wildlife	83	71	65	61
Take personal guided tours	77	83	63	70
Send away for brochures about wildlife	76	67	60	56
Tune to local wildlife information radio broadcasts	74	67	45	30
Check out video tapes from a local supermarket	65	54	43	32
Check out video tapes from a local movie rental store	63	56	45	31
Check out audio tapes to take on car tours	54	60	44	33
Check out audio tapes for home use	52	53	32	29

a. Cell entries are percent of respondents who are slightly, quite, or extremely likely to obtain information about wildlife from each source.

Source: Manfredo, Bright & Stephenson (1991)

Conclusions and Recommendations

This report synthesizes the results of previous studies in an effort to better understand wildlife viewers in Colorado and to identify gaps in our knowledge about them. Reviewing these reports reveals human dimensions information about wildlife viewers in Colorado that can be useful in planning, implementing and evaluating watchable wildlife-related programs and projects. Following is a summary of conclusions, and some accompanying recommendations for application.

- ***Viewing wildlife is important to Coloradans***

The importance Colorado residents place on wildlife watching supports continued agency and community efforts to develop and improve wildlife viewing opportunities. The majority of residents believe it is important to take trips to view wildlife, and nearly all Coloradans value the opportunity to watch wildlife while participating in other recreational activities such as sightseeing, picnicking, camping, hiking, and fishing. In addition, residents value watching wildlife around their homes and in their communities. They report that they enjoy learning about wildlife, and think it is important for everyone to have a chance to learn about it.

The importance of wildlife watching activities should be interpreted not only as rationale for developing wildlife viewing facilities and for offering educational services, but also for protecting and enhancing habitat, and for providing management activities that benefit non-consumptive wildlife experiences. In some circumstances, the most important thing that can be done to provide opportunities for viewing wildlife is simply to provide habitat. Many management actions aimed at enhancing habitat, for both game and non-game animals, can be designed to also enhance viewing opportunities. Wildlife management activities, such as inventory, increasing wildlife populations, and determining preferred age and sex ratios within populations can be accomplished with wildlife viewing benefits in mind.

- ***Wildlife viewing participation rates in Colorado are high***

Across all studies, over half of the respondents reported taking trips specifically to watch wildlife, and some studies indicate a growth in the popularity of the activity. This relatively high annual participation rate (which exceeded the average for participation in either fishing or hunting), highlights the size and interest level of this constituent group. The fact that participation rates are based on taking trips specifically to view wildlife suggests that there is potential for successful development of nature-based local tourism opportunities in the state. If this participation data included those who view wildlife near their homes, or those who enjoyed viewing wildlife while pursuing other activities, reported participation rates may be considerably higher.

Making it a management priority to meet the recreation and education needs and desires of wildlife viewers could have long lasting positive impacts. Wildlife viewing participants comprise a large potential constituency for wildlife and natural resource agencies, but currently few agencies approach them as a constituent group. In addition, resource managers may benefit from recognizing and promoting the common interests of all wildlife recreation constituents (anglers, hunters, and viewers) to build unified support for wildlife and wildlife management activities. Those Coloradans who enjoy all three activities may offer valuable assistance and needed support.

- ***Interest in wildlife viewing is higher than actual participation, indicating a strong latent demand***

Coloradans' interest in future wildlife viewing opportunities suggests a clear potential for growth in wildlife viewing participation, and a strong potential audience for wildlife education. Most Coloradans report interest in taking future recreational trips for which wildlife viewing is the primary purpose, and most express interest in learning about wildlife and watching wildlife while sightseeing, camping and hiking.

Efforts to involve this “interested” audience will benefit from deliberate and educated planning. Research findings described in this report suggest that “Watchable Wildlife” programs should do the following: provide people with more information about viewing opportunities; provide and support close-to-home opportunities; carefully consider the costs for wildlife viewing events; provide people with opportunities to view wildlife while participating in other recreational activities; consider information about people’s interests in specific wildlife species; and focus efforts on people’s preferred viewing facilities and interpretive media. Since findings highlight the diversity of wildlife viewer interests, managers may be most successful when they design programs and projects with the preferences of a target audience in mind.

- ***Coloradans prefer to view wild animals in wild settings***

Colorado viewers prefer natural settings with the opportunity to view wild, native animals - even if seeing those animals is not guaranteed. This information should be welcomed to natural resource managers based on its implied support of natural habitat protection. In situations in which habitat is manipulated to enhance viewing opportunities, it may be important to some viewers that the environment be developed to look as natural as possible. This preference may suggest that some of the enjoyment in wildlife viewing comes from the challenge of learning about and finding the animal for which one is looking.

- ***More residents express a great deal of interest in seeing certain species of wildlife than in others***

Information about the kinds of wildlife that people report being interested in seeing may help managers select or promote wildlife viewing projects. For example, a majority of residents express a great deal of interest in viewing deer, eagles, and elk. Managers and communities that can offer these opportunities may successfully use this information to help them develop positive viewing experiences or promote certain projects. However, further understanding and consideration of this information is needed. Wildlife viewing program efforts do not necessarily need to focus on animals that the majority of people find interesting. Over a third of those asked expressed a great deal of interest in seeing a diversity of wildlife from birds to fish, fox to bighorn sheep. While the percentage of people interested in other species may be smaller, their interest may be keen. For example, though few people expressed a great deal of interest in seeing grouse, grouse viewing programs have been well attended and are important to local tourism in some Colorado towns. Because wildlife viewing recreation can be a tool for conserving and teaching about biodiversity, it is recommended that programs continue to provide a broad variety of experiences exploring a variety of habitats, species, and behaviors of wildlife. In addition, it is not clear, from review of these studies, what other criteria or factors (besides particular species) people use in choosing when and where to watch wildlife.

Data about people’s interest in seeing specific animals may be helpful in evaluating viewing experience “success”. Comparing interest in seeing an animal to the number of people actually observing it seems at first to be a relatively simple and practical process. But the usefulness of the exercise will depend on the specific situation. In places where people express a high interest in viewing relatively rarely seen species, this tool may have little value. But in locations where interest in viewing a common animal is higher than success, increased wildlife viewing education efforts may help increase viewing success, particularly when some of the reasons people are not having success are that they cannot properly identify wildlife, are not looking in the right habitat, or do not have realistic expectations about the likelihood of seeing a particular animal.

- ***Coloradans report feeling that lack of time and not enough information prevents them from viewing wildlife more often***

When asked what they see as a problem that prevents them from viewing wildlife more often, most residents said they simply didn’t have enough time, and many reported that they were not aware of opportunities. These findings imply some clear directions for both educational efforts and project

selection for managers wishing to increase viewing participation. Stating that one does not “have enough time” may indicate the perception that wildlife viewing requires a substantial time commitment, or it may simply imply personal prioritization. Since all studies indicate that interest is high, however, watchable wildlife efforts can minimize the effects of this perceived constraint by offering and promoting opportunities that are closer to home and readily accessible. This may also mitigate the perception, reported by some, that one “has to travel too far from home to get to wildlife areas.” In addition, promoting wildlife viewing opportunities that can be enjoyed while pursuing other pastimes may help reduce time commitment concerns and meet other needs as well. Improving and expanding information and promotion efforts that explain where to go, what to see, and how to be successful at viewing wildlife is recommended. Managers will be most effective by adhering to the recommendations that follow about information media.

While some study respondents indicated additional problems, the meanings and implications are less clear. For example, the perception that viewing wildlife costs too much (“I don’t have enough money to visit the areas necessary to observe wildlife”) may suggest a lack of accurate information about costs, a perception that wildlife viewing means extensive travel or exotic locations, or a true lack of resources. The first two perceptions could be mitigated by improved and targeted information efforts. Offering and promoting close-to-home wildlife viewing experiences may mitigate all three.

- ***Most Coloradans combine wildlife viewing with other activities, and view wildlife at home***

Most wildlife viewing participation rates are based on taking trips specifically to view wildlife, and sometimes “a trip” is measured as “a mile or more from one’s home”. To more fully understand wildlife viewing participation rates, managers should consider participation in activities other than traveling more than a mile from one’s home specifically to view wildlife. A 1995 statewide study revealed that, while just over half of Coloradans took a trip that year specifically to view wildlife, 91% reported enjoying the presence of wildlife during other recreational activities. Many people combine wildlife viewing with auto sightseeing, picnicking, walking, hiking and other recreational activities. In addition, most Coloradans watch wildlife in their backyard.

Managers can apply this information by designing wildlife viewing opportunities that can be enjoyed while people are engaged in other activities. Examples include developing wildlife viewing opportunities along scenic byways, incorporating picnic areas into viewing sites, and including wildlife viewing facilities along hiking and walking trails.

That several studies reported that Coloradans watch wildlife near their homes suggests that managers should pursue such opportunities as providing education about enhancing backyard habitats, providing neighborhood habitats and viewing areas, and providing information about wildlife and wildlife viewing close to home.

- ***Some Coloradans enjoy feeding wildlife as part of their viewing experience***

Bird feeding, closely associated with viewing activities, appears to be growing in popularity; over half of the respondents in a 1995 study reported participation. No studies reviewed for this report indicated any perceived problems with feeding birds. However, information from one study of Mt. Evans visitors and area residents reveals to managers the complexity of the wildlife feeding issue. In this study, almost one fifth of the visitors, and over 40% of the area residents, reported that feeding wildlife on the mountain was an important part of their visit. But few agreed that it was “okay” to feed wildlife, (though they found it more acceptable to feed smaller animals, such as marmots and chipmunks, than larger animals, such as deer and elk). And, a majority of visitors reported that people feeding wildlife was perceived as a problem. Similar to the public, resource managers also share varying perspectives with regard to when and if wildlife feeding is a problem. Managers should continue discussions about the wildlife feeding issue amongst themselves, with visitors and the public; learn more about the motivation for and results of wildlife feeding; research the efficacy of

different education and persuasion efforts; and explore alternative positive human-wildlife experiences.

- ***Coloradans express interest in a number of different wildlife viewing facilities, but most preferred undeveloped lands with trails***

Some types of viewing facilities can assist people in successfully viewing wildlife and increase their enjoyment of the activity. Knowing what kinds of enhancements viewers desire should help focus planning and management. In general, Coloradans prefer undeveloped lands with dirt hiking trails for viewing wildlife. Scenic overlooks, informational nature centers, dirt hiking trails with no signs, dirt hiking trails with wildlife interpretive signs, and observation areas/photography blinds are also desired by most residents to help them observe and enjoy wildlife.

When selecting what kinds of developments to consider, managers should consider the differences in experience preferences among different types of viewers, and plan a level and type of development to suit the target audience. Coloradans' preference for undeveloped lands and simple trails is consistent with their desire to view wild animals in natural settings.

- ***Residents seek information about wildlife and wildlife viewing from common sources such as television and newspapers, but more avid wildlife viewers are likely to seek additional information***

Knowing where people seek wildlife-related information can help managers target their efforts. One study revealed that television and newspapers, followed by friends and magazines, were the most widely used sources of information about wildlife by Colorado residents. With respect to wildlife viewing information, most Coloradans reported that brochures/pamphlets, wildlife watching field guides, wildlife checklists and maps, and newsletters were most desired to help them observe wildlife and increase their enjoyment. The types of information reported to be most useful to Denver Metro residents were information about the best times and locations to view wildlife and the types of wildlife found in the area. The importance of providing wildlife viewing information should not be understated, as Coloradans reported they are likely to change their outdoor recreation plans if they have information on where and when they might see wildlife, a fact that should be useful to local tourism efforts. Focusing informational and promotional efforts on these media and topics should result in more successful communication with wildlife watchers.

In one study, 97% of Coloradans reported enjoying learning about wildlife and 98% said that it was important that all Colorado residents have a chance to learn about wildlife in the state. These high percentages represent both an opportunity and a challenge to managers. It should be very helpful to know how eager Colorado residents are to not only see, but to learn about Colorado wildlife. The challenge is to select the right medium, and promote the opportunities that will attract, engage, and educate. Again, agencies can increase success by learning more about the preferences of different audiences, and then targeting media and experience opportunities to match different preferences.

- ***Wildlife viewers differ in their interests, rates of participation, perceived constraints, facilities preferences, and information sources; but recognizing similarities among some viewers, and classifying viewing experiences into types can help managers better meet viewer needs***

Research indicates that there is no "average" wildlife watcher and recognizes the diversity among wildlife viewing participants. There are, however, similarities among some viewers leading researchers to classify viewers into more distinct subgroups. Several different systems may be used for segmenting participants, and selecting the most appropriate may depend upon the management questions being asked. Understanding different audience segments, and targeting efforts to meet specific needs, can make project development, management, and education efforts more efficient and effective.

One typology that has been used in Colorado and is referenced in this report describes four different wildlife viewer types: “highly involved”, “creative”, “generalist”, and “occasionalist”. These viewer types differ with respect to a variety of variables, including the activities they would combine with wildlife viewing, the types of settings in which viewing would occur, how viewing could be managed, and constraints to participation in wildlife viewing. Findings from previous studies about these different types of wildlife viewers can and should be used immediately. However, more easily accessible information, and guidance for practical application is needed if managers are to take full advantage of previous work.

According to the typology mentioned above, most Coloradans are "occasionalist" or "generalist" viewers. Managers may lean toward designing the majority of projects for this larger group or for novice viewers. But planning and targeting services for the more “highly involved” and “creative” viewers can reap benefits for both agencies and private organizations. Individuals in “highly involved” and “creative” viewing types may learn more from educational efforts, offer stronger support for programs, and be more willing to volunteer.

Bird watchers comprise one clear subgroup of wildlife viewers. The strong commitment, breadth of knowledge, and financial investment of highly involved bird watchers suggests a present and potential strength as a wildlife constituency, and wildlife agencies may benefit from strengthening their relationship with this community. While the studies in this report do not describe bird watchers, studies by other organizations may provide useful information for planning and providing services for birders. Of course, birders are not a homogenous group either, and birding organizations such as the American Birding Association can provide useful insight into different interest segments of this group.

- ***Satisfaction with a wildlife viewing experience may be influenced by several factors***

While no study reviewed asked wildlife viewers to identify the characteristics of a satisfying viewing experience, data from several studies suggest factors that may influence satisfaction. Managers should consider the following factors when planning for different types of wildlife viewing experiences: the availability of useful pre-trip information, the accessibility of the experience (including time needed and cost), the "wildness" of the animals and naturalness of the setting, and opportunities to combine viewing with other recreational activities. Public interest in the wildlife species and the likelihood of actually seeing wildlife should also be considered. In addition, the level of development, potential for crowding, presence of preferred facilities, and the presence and medium of interpretive and educational opportunities may influence people’s satisfaction with their wildlife viewing experience.

Suggestions for Future Research

Although the review of past reports provides useful information about Coloradans' wildlife viewing participation and preferences, more information is needed to gain a better understanding of this important and growing constituent group. The following is a selected list of recommendations for future human dimensions related research suggested by knowledge gaps revealed in this compilation. This list is not intended to imply research priorities, or to recommend particular research methodologies.

- ***What constitutes a satisfying wildlife viewing experience?***

While previous research indicates a strong interest in wildlife viewing, a relatively high participation rate, and diversity among viewers, further information about what constitutes a rewarding experience would be helpful to program managers for use in planning, implementation and evaluation. Since studies suggest the value of designing experiences to meet the needs of targeted audiences, additional information about the preferences and perceptions of wildlife viewing recreationists is required.

- ***How important are specific wildlife species, behaviors, and habitats in determining viewer interest and satisfaction?***

Though some studies included in this compilation listed wildlife species and asked respondents to indicate their level of interest in seeing them, how useful is this information in program planning? While it first appears helpful for targeting or promoting efforts, further information is needed to interpret meaning and optimize application. Such a listing prompts further questions. For example, do people tend to select only animals they have seen or know about? How might education or promotions influence the desirability? Does animal behavior play a part in desirability/ satisfaction? Do interests in habitats (such as wetlands, grasslands, etc.) also influence interest and satisfaction?

- ***How do these satisfactions differ among “viewer types”?***

Management efforts are often targeted toward the "average viewer", but research suggests that planning for more specific types of experiences may be useful. Previous studies indicate a difference in needs and preferences across viewer types with regard to some of the factors that influence satisfaction mentioned above. Understanding these differences will give managers the means to more efficiently and effectively match target audiences to opportunities, and to provide the services desired by a diverse public. Further understanding of subgroups may be accomplished through a variety of approaches, both formal and informal, and should include evaluation of current programs and testing of current proposed wildlife viewer typologies.

- ***Is satisfaction defined differently when the “opportunity” is close to home?***

Much of the previous research defines "wildlife viewing" as traveling a specific distance away from the home specifically to watch wild animals and birds. But studies suggest that many people watch and value wildlife in their own communities and backyards. Data about perceived constraints suggests the need to support close-to-home opportunities. Research outside the scope of these reports suggests that close-to-home experiences with wildlife may be critical both to people and to the long-term protection of wildlife. What kinds of close-to-home experiences do people need and desire? Are the needs for information, education, facilities, etc. different when people are traveling to viewing destinations or combining wildlife viewing with other recreational pursuits? What are the benefits to people, communities, and to wildlife of ensuring close-to-home opportunities? Learning more about these issues may also help resource managers protect wildlife habitat in urban areas.

- ***What are the interests and desires of non-residents and “tourists” in viewing Colorado wildlife?***

Knowing how many people come to Colorado to view wildlife, learning about their interests, activities, and information needs, and further understanding their economic impacts can be important to managers of both public and private entities. This information can be especially useful when wildlife viewing programs partner with communities to provide and promote wildlife viewing opportunities to advance eco- or heritage-tourism. Teaming with tourism programs for research may develop needed information about desired "support services" (e.g., food, lodging, shopping, etc.) that may influence the likelihood that tourists (whether residents or non-residents) will participate in wildlife viewing.

- ***What, if any, interests and activities are incompatible with wildlife viewing? What kinds of management strategies could mitigate potential conflicts?***

In two studies regarding perceived constraints to wildlife viewing, 25% and 32% of Coloradans reported that they were “concerned that there will be other people with different interests out at the same time [they] are trying to observe wildlife”. Since study participants were asked only to respond to a list of potential constraints, and had no opportunity to explain, no further information was provided that could help clarify their statement. Managers may want to learn more about what types of interests or activities are perceived by people as incompatible with wildlife viewing and determine potential management strategies for mitigation. This may be especially helpful for wildlife viewing programs on hunted properties.

- ***What are the benefits or outcomes of wildlife viewing experiences?***

A current trend in resource recreation planning is to consider not only the experiences desired, but also the broader benefit of the activity to both individuals and communities. Current studies suggest that wildlife viewing recreation has benefits to an individual’s personal physical, mental and spiritual health, as well as benefits to communities, such as family bonding, environmental conservation, and positive economic impact. The results of these studies need to be made available to more resource managers so that they can apply this information when planning their wildlife viewing opportunities, and enhance these personal and community benefits. Additional research may help answer complex questions about motivations for and values related to viewing. Program managers may be interested in learning about how viewing experiences impact knowledge, beliefs or attitudes about wildlife and wildlife management, and whether there is any measurable connection between direct experiences and “conservation” behaviors.

Experience Based Recreation Management (EBM) is an approach that advocates recognition of the benefits that arise from managing for wildlife viewing experiences. While the EBM approach (which was born in the late 1970’s) is not the only framework available for recreation management, many elements of EBM are found in all of the contemporary approaches to outdoor recreation management. A new book emphasizing this approach to managing wildlife viewing experiences is due out later this year (Manfredo, In press).

- ***How might Coloradans who value wildlife viewing opportunities contribute to wildlife agency funding for this purpose?***

While "willingness to pay" and other funding-related issues were not addressed in these reports, political and economic climates suggest the value of further study of the issue. Research outside the scope of these reports indicates that resource managers and hunting and fishing constituents show a limited interest in supporting wildlife viewing programs with funding from license sales, and that wildlife viewers are prepared to contribute to wildlife agency funding. Wildlife viewers make up a large, but relatively unorganized constituency for wildlife. Further research may help direct efforts to secure alternative funding sources. Wildlife agency efforts to pursue additional funding sources may

benefit by promoting areas of common interests (such as habitat and species protection) among all wildlife constituents.

- ***What are the characteristics of “wildlife viewers” as a wildlife constituency group?***

Much has been written about hunters and anglers as wildlife constituency groups. To some extent, wildlife agencies can speak about hunters' and anglers' contributions to wildlife; the impacts of their recreational pursuits on knowledge and attitudes toward wildlife management; the preferences of organized groups regarding priorities for expenditure of license dollars; and even the value of these pursuits to personal health, growth and satisfaction. But participation in consumptive recreation is declining relative to a growing population. Most Coloradans participate in wildlife viewing of some kind, and residents are beginning to speak up more effectively about their desires related to wildlife management. Information about wildlife viewers as a constituent group should be provided to resource managers to help guide future wildlife-related programs.

Questions are numerous, and it would be valuable for agencies and organizations to pursue research together over time. How knowledgeable are viewers about wildlife and wildlife management issues? What are viewer attitudes and beliefs about wildlife management and wildlife agencies? To what degree do viewers contribute to conservation? Some of this information may exist and may simply need to be organized for easy access and application.

- ***What are the impacts and implications of people feeding wild animals in recreational settings?***

People feeding wildlife and approaching wildlife closely are perceived as problems by many resource management professionals and outdoor recreationists. On the other hand, some resource management professionals perceive value in close human-wildlife interactions in some circumstances. Managers need more information to address and make decisions about this issue. Further research is recommended for learning about people's motivations for feeding, the short and long-term impacts of these experiences on their attitudes and beliefs about wildlife, and the possible relationships between people's beliefs and their actions related to feeding wildlife. Research about acceptable alternatives and effective methods for persuading visitor behaviors relative to wildlife interactions could also guide future management efforts.

- ***How will wildlife viewing participation rates, interests, motivations, and satisfactions among the public change in the next five to ten years?***

In addition to pursuing answers to questions suggested in this report, selected questions from past studies should be asked periodically to determine trends and to help evaluate the relevance and success of current programs. If surveys are used to gather public input, it is recommended that pertinent questions from past studies be repeated using consistent wording.

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Appendix A

Information About the Studies

Coloradans' Attitudes about and Participation in Nonconsumptive Wildlife Activities - Watchable Wildlife Recreation in Colorado (Standage Accureach, Inc. 1990a)

Year survey was conducted	1990
Survey Type	Phone
Sample	Colorado
Sample size (response rate)	601 (unreported response rate)

Participation in and Attitudes toward Hunting, Fishing and Wildlife Issues in Colorado (Standage Accureach, Inc. 1990b)

Year survey was conducted	1990
Survey Type	Phone
Sample 1	Colorado
Sample size (response rate)	602 (unreported)
Sample 2	Anglers 405 (unreported)
Sample 3	Hunters 400 (unreported)

Public Preferences for Non-Consumptive Wildlife Recreation in the Denver Area (Manfredo, Bright & Stephenson 1991)

Year survey was conducted	1990
Survey Type	Phone and mailback
Sample	Denver Metro
Sample size (response rate)	385 (81%)

Coloradans' Recreational Use of and Attitudes Toward Wildlife (Fulton, Manfredo & Sikorowski 1993)

Year survey was conducted	1993
Survey Type	Phone
Sample 1	Front Range
Sample size (response rate)	401 (37%)
Sample 2	Eastern Colorado
Sample size (response rate)	401 (36%)
Sample 3	Western Colorado
Sample size (response rate)	400 (46%)

Segmentation and Channel Analysis: Reaching the Colorado Public (Slater & Coughlon 1995)

Year survey was conducted	1994
Survey Type	Phone
Sample	Colorado
Sample size (response rate)	938 (78%)

Beliefs and Attitudes Toward Urban Wildlife (Wittmann, Vaske, & Sikorowski 1995)

Year survey was conducted	1995
Survey Type	Mail
Sample	Denver South Suburban open space region
Sample size (response rate)	457 (52%)

Human-Wildlife Interactions on Mt. Evans (Vaske, Wittmann, Laidlaw & Donnelly 1995)

Year survey was conducted	1993
Survey Type	Mail
Mt. Evans sample description:	An area including eight counties from Denver Southwest through Park County
Sample 1	Mt. Evans visitors (60% Colorado residents)
Sample size (response rate)	402 (68%)
Sample 2	Mt. Evans regional residents
Sample size (response rate)	200 (37%)
Sample 3	Mt. Evans hunters
Sample size (response rate)	389 (68%)

Societal Preferences for Mountain Lion Management Along Colorado's Front Range (Zinn & Manfredo 1996)

Year survey was conducted	1995
Survey Type	Mail
Sample 1	Denver Metro
Sample size (response rate)	727 (50%)
Sample 2	Colorado Springs Metro
Sample size (response rate)	828 (56%)
Sample 3	Central Region Foothills
Sample size (response rate)	914 (67%)
Sample 4	Interaction population (people who reported encounters with mountain lions to CDOW)
Sample size (response rate)	199 (73%)

Colorado Residents' Attitudes Toward Trapping in Colorado (Fulton, Pate & Manfredo 1995)

Year survey was conducted	1995
Survey Type	Phone
Sample 1	Front Range
Sample size (response rate)	300 (38%)
Sample 2	Rural Colorado
Sample size (response rate)	300 (51%)
Sample 3	Mountain areas with high growth
Sample size (response rate)	300 (52%)

Public Attitudes Toward Land Use and Wildlife in La Plata County (Layden & Manfredo 1996)

Year survey was conducted	1995
Survey Type	Mail
Sample 1	Lived in Durango city limits
Sample size (response rate)	368 (72%)
Sample 2	Lived in the rest of La Plata County
Sample size (response rate)	457 (70%)

We assessed wildlife and wildlife habitat sensitivities in the Package 1 study area through a combination of reviews of existing literature and data (Blood 1982; Enkon 1997; Wells 1997; Acres International 1998; Conservation Data Centre (CDC)1998), site visits, reviews of existing mapping (TRIM, NTS topographical, airphotos, biophysical.Â and Associates. 11. MOTHâ€™SWildlife Accident Reporting System (WARS) database was reviewed to help identify â€œroad-killâ€ hotspots along the TCH. The WARS database includes records of road-killed animals reported to MOTHby highways maintenance contractors or MOTH personnel. Data from 1988-1997 were included in the analysis. Significant Life Experiences Revisited: a review of research on sources of environmental sensitivity. LOUISE CHAWLA Whitney Young College, Kentucky State University, USA. SUMMARY Beginning with the study of significant life experiences initiated by Tanner, this article reviews a growing body of related research in the form of surveys, interviews, and questionnaires that explore people's accounts of the sources of their environmental interest, concern, and action. The questions, methods, and results of studies in this field are closely compared. Wildlife is "in freefall" as we burn forests, over-fish our seas and destroy wild areas, says Tanya Steele, chief executive at WWF. "We are wrecking our world - the one place we call home - risking our health, security and survival here on Earth. Now nature is sending us a desperate SOS and time is running out." What do the numbers mean? The report looked at thousands of different wildlife species monitored by conservation scientists in habitats across the world. They recorded an average 68% fall in more than 20,000 populations of mammals, birds, amphibians, reptiles and fi Wildlife Viewing. Few other places in North America offer such a bounty of wildlife-watching opportunities as Colorado. Who in your group will win the eagle-eye award by spotting some of Coloradoâ€™s most majestic residents â€” state mammal bighorn sheep, bald eagles, mountain goats, moose, elk, pronghorns?Â One of the best things about wildlife viewing in Colorado is how easy it is. With eight National Wildlife Refuges, hundreds of State Wildlife Areas, 12 National Parks and National Monuments, 41 Colorado State Parks and millions of acres of National Forest and other public lands, youâ€™re never more than a short drive from the natural habitat of more than 900 species of Colorado wildlife. For the view synthesis of a dynamic scene from images with baselines, the depth and foreground motion from each view need to be consistent across the views. Here we review view synthesis, depth estimation, and scene reconstruction techniques, and discuss the relations to our method. Novel View Synthesis The problem of novel view synthe-sis is strongly tied to multiview 3D reconstruction as it re-quires transporting pixels across views through the geome-try of scenes.

Estimates for wildlife watching activities in Colorado use a slightly different methodology to the hunting and fishing estimates. Estimates of trip and equipment expenditures and activity days for wildlife watching more than one mile from home are based on the wildlife watching sample of the 2006 USFWS national survey. Assemble the data needed from CDOW and to review data sources and model assumptions. Data collection BBC obtained the most recent available data from CDOW, the U.S. Fish and Wildlife Service, the U.S. Bureau of the Census, the Colorado State Demographers Office, and the IMPLAN Group, Inc. Core model implementation BBC updated the CDOW economic impact model. Colorado Parks and Wildlife (CPW) estimates that by 2026, municipalities and state parks will need to build 3,464 more miles of trail to accommodate the state's hunger for adventure. That's a lot of biggery, to quote my daughter's favorite Dr. Seuss story, *The Lorax*. Examining that data alongside trail-use trends, managers can observe correlations and tweak policies accordingly. When burrowing owls built a nest near a popular regional trail, for example, managers rerouted traffic around it though users complained about the subpar temporary trail surface. And I now expect the recreation contingent to lead the way in wildlife conservation, even if that means accepting compromises to our favorite outdoor activities. Roads are one of the most important factors affecting the ability of wildlife to live and move within an urban area. Roads physically replace wildlife habitat and often reduce habitat quality nearby. 2003. Effects of roads on San Joaquin Kit Foxes: A review and synthesis of existing data. In Proceedings of the 2003 international conference on ecology and transportation, ed. C. L. Irwin, P. Garrett, and K. P. McDermott, 397-406.