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# Specialization and Differences in Setting Preferences Among Wildlife Viewers

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**Abstract:** We asked nonresident visitors to Montana about their preferences for wildlife-viewing settings. Subjects were classified into three groups based on a measure of wildlife-viewing specialization. Specialists have greater interest in "lower profile" wildlife species than do Novices. Seeing upland game birds, birds of prey, and songbirds was desired by many more people in all three segments than were successful at observing these wildlife. Specialist viewers were more likely to hike self-guided viewing trails and read signs along trails than Novices. Novices were more interested in facility developments at wildlife-viewing sites than were Specialists, but Specialists showed strong support for trails and interpretive efforts. There was widespread agreement among the groups on the most useful types of information. Our results support the idea that recreation specialization is a useful tool for segmenting recreationists. By recognizing segments and understanding their preferences, managers can produce the best fit between resource opportunities and people.

**Keywords:** Specialization, wildlife viewing

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## Introduction

Increasingly, rural communities hit hard by job losses in their traditional economic sectors have turned to tourism and recreation to bolster their economies. The city of Arcata, California, for example, recently decided to market itself as a destination for birdwatchers. Concomitantly with these shifting economic forces, wildlife agencies have increasingly recognized the importance of non-consumptive uses of wildlife by the recreating public. Watchable wildlife programs are now firmly established in many states, with sites being developed and managed primarily for wildlife viewing. As local communities and states market wildlife viewing to an increasingly interested public, wildlife agencies often shoulder the added responsibilities of planning, developing, and managing these opportunities.

Little is known about the specific needs and preferences of wildlife-viewing recreationists, though it is recognized that those who participate in wildlife viewing have diverse motivations, desired experience outcomes, and use histories (e.g., see Manfredo & Larson, 1993; McFarlane, 1994). Users with a variety of needs and preferences require that managers provide a diversity of wildlife-viewing opportunities. Information about users and potential users will help managers allocate opportunities to meet the diversity of desired wildlife viewing experiences.

A first step is to identify constituencies of those interested in wildlife. Driver (1985) suggests differentiating among opportunities or products by identifying the relative importance of preferred and expected attributes of wildlife use opportunities (such as wildlife viewing), then segmenting users to determine the attributes favored or demanded by different user groups or market segments. Constituencies may be identified based on socioeconomic variables, geographic distribution, motivations and desired experience outcomes, attitudes, past experience, and specialization. We chose the concept of recreation specialization to classify wildlife viewers and assess their preferences for settings.

Bryan (1977) first articulated the concept of recreation specialization to explain the diversity of attitudes and behaviors associated with one's participation in a recreational activity. He stated that specialization "refers to a continuum of behavior from the general to the particular, reflected by equipment and skills used in the sport and activity setting preferences." Researchers have used the concept to examine participation in numerous activities, and to explain differences in motivations (Chipman & Helfrich, 1988; McFarlane, 1994), setting preferences (Virden & Schreyer, 1988), perceptions of crowding (Graefe, Donnelly, & Vaske, 1986), preferences for managerial regimes (Schreyer & Beaulieu, 1986) and norms of depreciative behavior (Wellman, Roggenbuck, & Smith, 1982). While Bryan identified specialists by such factors as past experience, equipment preferences, and resource dependency, in recent years some researchers have included a measure of affective attachment (McIntyre, 1989; McIntyre & Pigram, 1992).

As recreationists become more specialized in their chosen activities, managers are challenged to meet their needs. As the research cited above suggests, visitors who vary in their level of specialization may well vary in their expectations and preferences for settings, experience outcomes, and benefits. Specialists may be more sensitive to changes in their favorite settings, and less willing to substitute other settings. These factors may lead to increased potential for conflict, disappointment, and dissatisfaction.

A number of studies have used specialization to identify constituencies of recreationists and examine differences in setting preferences and information use. Hopkin and Moore (1994) found that mountain bikers differed in their preferences for setting attributes according to their level of specialization; specialists showed a stronger preference for setting attributes that made the mountain biking experience more challenging.

Backcountry hikers similarly differed in their preferences for setting attributes according to level of specialization—21 of the 38 environmental setting attributes measured by Virden & Schreyer (1988) were found to be significantly related to the degree of hiking specialization. Specialized hikers were less tolerant of seeing others on the trail, and less tolerant of motorized recreationists. Specialized hikers were also less supportive of facility development and non-recreational resource uses in hiking areas. Williams and Huffman (1986) found that specialized hikers to Rocky Mountain National Park were more likely than novices to seek out additional information about hiking trails in the park. These findings suggest that managers may be able to tailor certain setting attributes to particular segments of wildlife viewers, thus facilitating experiences that are desired by those different segments, and likewise direct certain segments of users to existing sites that best match their preferences.

Few, if any, studies have directly examined setting preferences of wildlife viewers. Manfredo and Larson (1993) surveyed Denver area residents interested in wildlife about their preferred wildlife viewing experiences. Their study was conducted within an experience-based management framework, and resulted in a typology of wildlife viewing experiences—Generalist, Occasionalist, Creativity, and High Involvement—based on desired experience outcomes.

Manfredo and Larson used this desired-experiences typology to suggest the types of settings that might facilitate certain desired experiences. They suggest that settings developed for Creativity and High-Involvement experiences have low levels of development to promote self-discovery, and High-Involvement experience opportunities would maintain a low on-site use density. Settings for Generalist and Occasionalist experiences could provide “destination” facilities such as visitor centers, wildlife exhibits with live animals, and interpretive centers. Types of information could also be tailored to particular experiences; e.g., providing technical information about wildlife to High-Involvement visitors, and information on how to engage in wildlife-associated creative activities such as painting and photography to Creativity visitors.

The current study complements Manfredo and Larson by directly examining (albeit within an alternative conceptual framework) the setting preferences of wildlife viewers. Although the two studies employ different conceptual frameworks, the degree to which these are “competing” frameworks is questionable; indeed, there may be a great deal of overlap between them.

This research focuses on nonresident preferences for wildlife viewing settings in Montana. The study uses the concept of specialization to identify segments of wildlife viewers, and to examine differences in preferences for various setting attributes among those segments. This information will allow managers of wildlife viewing opportunities to develop and manage settings to meet the needs and desires of different segments of the recreating public.

## Methods

Data were collected during a 1993 survey of nonresident visitors to Montana. Nonresident visitors were intercepted at eight highway entrances to Montana between July and October 1993. These eight highways accounted for 54 percent of nonresident automobile entries to Montana in 1990; the remaining 46 percent were distributed among 30 other highways (Christensen, 1993). Traffic estimates for the eight highway entrances were obtained from the Montana Department of Transportation (MDT). The nonresident traffic proportion for each of the eight entrances was estimated based on visual samples of vehicle license plates collected during this and other ongoing nonresident traffic surveys in Montana. These nonresident proportions were applied to the MDT traffic estimates, and returned surveys were weighted to make the sample proportional to nonresident traffic at each of the eight highway entrances.

Visitors were approached at rest areas along the four interstate highways sampled, and were flagged to the side of the road by flagpersons at the remaining four two-lane highways. Intercepts were located at the periphery of the state to intercept subjects before they could disperse. Once intercepted, subjects were asked several questions regarding their group and trip (e.g., general purpose of trip). Each intercepted group then received a numerically coded questionnaire (number codes indicated the highway at which it was distributed) and a self-addressed, stamped return envelope. Subjects were asked to complete the questionnaire during their visit to Montana. Of the 4,626 questionnaires distributed, 2,216 were returned for a response rate of 48 percent. The survey was designed to be completed by visitors while in Montana, therefore addresses were not collected and follow-ups not conducted.

The questionnaire measured a variety of preference and behavioral aspects of the wildlife viewing experience. Some of the survey questions were taken or adapted from recent surveys of wildlife viewers in Colorado (Manfredo & Larson, 1993), Alberta and Alaska. Subjects were asked how interested they would be in viewing each of 10 different types of wildlife (a typical Montana example was given for each category). Responses were measured on a 4-point scale from "not at all interested" to "very interested." Respondents also indicated which of these types of wildlife they observed during their trip.

Preferences for information were measured by providing subjects with a list of 12 types of information on wildlife viewing; respondents selected the four they found most useful. Subjects were also asked how likely it was they would obtain information on wildlife viewing from each of 13 sources; responses were measured on a 4-point scale from "not at all likely" to "very likely." Preferences for on-site setting attributes of wildlife viewing sites were measured by asking subjects the desirability (measured on a 4-point scale from "not at all desirable" to "very desirable") of 17 site attributes at their "ideal" viewing site.

Finally, reported travel behavior related to wildlife viewing was measured by 1) asking subjects to choose one of three statements that best described their wildlife viewing patterns on their trip; 2) asking them if they had visited a designated wildlife viewing area during their trip; and 3) asking if any of their visits to designated wildlife viewing sites were "unplanned side trips."

To operationalize the construct of specialization as related to wildlife viewing, four items were used to create a measure of specialization (see Table 1). These four items constitute a pool of wildlife viewing-related behaviors, representing different expressions of specialization. Past experience is often used in measuring specialization (Bryan, 1977; McFarlane, 1996; Wellman, et al., 1982), but measuring only the number of trips may not fully capture this dimension of specialization. Therefore, we incorporated both a quantitative (frequency of participation) and qualitative (style of participation) measure of experience. Number of wildlife viewing trips taken the previous year measured frequency of participation, while asking subjects if they had studied or made notes about the behavior or habitat of wildlife was used as a qualitative measure of experience. Equipment preference has long been recognized as a dimension of specialization (Bryan, 1979). We provided a list of equipment and asked subjects to indicate which they had used in previous wildlife viewing trips.

**Table 1**  
**Items Used to Measure Specialization**

- 
- |  |
|--|
| <ul style="list-style-type: none"><li>▪ Took 10 or more wildlife-viewing trips in the previous year</li><li>▪ Studied or made notes about the behavior, habitat, or other such aspects of the wildlife seen on past wildlife-viewing trips</li><li>▪ Used specialized equipment on past wildlife-viewing trips</li><li>▪ Participated in an organized survey or count of wildlife in the past year</li></ul> |
|--|
- 

We also sought to measure involvement or personal commitment to wildlife viewing, and chose a behavioral expression of commitment specific to wildlife viewing—participation in an organized survey or count of wildlife. While we felt this measure performed well in discriminating subjects, in retrospect our measure of specialization would have benefited from the inclusion of an affective measure of commitment as well.

Subjects who did not meet the criteria on any of the four items were classified as non-specialists (we will call them Novices;  $n = 1,538$ ); those who met the criteria on one of the four items we called Intermediates ( $n = 452$ ); and those who met the criteria on two or more of the items were classified as Specialists ( $n = 221$ ).

These groups then served as the basis for comparisons in subsequent analyses. Differences among groups on preferences for wildlife, types of

information and information sources, setting attributes, and wildlife-viewing travel patterns (all measured with nominal or ordinal level scales) were examined using Kruskal-Wallis one-way analysis of variance (a nonparametric procedure). When the resulting chi-square statistic indicated significant differences among the segments, the Mann-Whitney U-Wilcoxon Rank Sum  $W$  test was used for pairwise comparisons of segments to determine which segments were significantly different from one another. Differences among group means on demographic and trip variables (measured with interval level scales) were tested with analysis of variance; a Student-Newman-Keuls post-hoc test was used to determine which group means differed.

## Results

When we compared the data from all intercepted groups (collected at the time of initial intercept) with the data from returned questionnaires, we found that the average group size of respondents (2.68) was significantly larger ( $p < .01$ ) than that of all intercepted groups (2.49). This may be because we received a disproportionately low number of returned surveys from people traveling alone (17% of surveys were distributed to people traveling alone, but only 13% of returned surveys were from lone travelers), while the reciprocal was true for groups of two or more (83% of surveys distributed to groups of two or more, and 87% returned from groups of two or more).

Likewise, 67% of questionnaires were distributed to people visiting Montana primarily for leisure (vacation, recreation, or to visit family or friends); while only 59% of returned questionnaires were from leisure travelers; conversely, travelers simply "passing through" Montana to another destination were slightly over represented in the final sample. These findings suggest only minor differences between the sample and the population it is supposed to represent; the extent to which these differences affect the findings related to preferences for wildlife viewing settings is not known.

### *Group and Trip Characteristics*

Specialists and Intermediates stayed significantly longer in Montana than did Novices, with a mean length of stay of 6.9 and 6.2 nights for Specialists and Intermediates, respectively, compared to 4.5 nights for Novices ( $F = 8.5$ , 2 df,  $p = .0002$ ). Average daily group expenditures showed a similar progression by segment: \$84 per day for Specialist groups, \$74 per day for Intermediate groups, and \$68 per day for Novice groups ( $F = 4.1$ , 2 df,  $p = .0168$ ).

Novices are significantly older than subjects in the other two segments; their median age is 51, compared with 46 for Intermediates and 45 for Specialists (Mann-Whitney  $p < .01$ ). In particular, Novices are more

likely to be 60 years of age or older (37% compared to 27% for Intermediates and 21% for Specialists).

Specialists are more highly educated than subjects in the other two segments. Sixty-eight percent (68%) of Specialists reported having a college degree or higher, compared to 55% and 42% of Intermediates and Novices, respectively. Specialists also have a higher household income; 37% of Specialists earned \$60,000 or more annually, compared to 22% of Intermediates and 23% of Novices.

#### *Travel Behavior Related to Wildlife Viewing*

As expected, Specialists were more likely to visit Montana to view wildlife—14% of Specialists indicated that viewing wildlife was their primary reason for visiting Montana, compared to 6% and 5% of Intermediates and Novices, respectively. Similarly, over 74% of Specialists indicated that viewing wildlife was *one* of the reasons they were attracted to Montana, compared to 55% of Intermediates and 40% of Novices.

Subjects were asked to describe their typical wildlife-viewing behavior on their trip. Most subjects (73%) said they typically watched for wildlife as they traveled. However, 26% of Specialists said they went to a specific area with the intention of watching wildlife, compared to 18% and 7% of Intermediates and Novices, respectively.

Subjects were also asked if they had visited an officially designated wildlife-viewing area while in Montana; 40% of Specialists, 32% of Intermediates, and 18% of Novices said they had. Of those who had visited such a site, 61% of Specialists indicated that one or more of those visits involved an unplanned side trip, compared to 53% and 33% of Intermediates and Novices, respectively.

Finally, subjects were asked to indicate their interest in taking future wildlife-viewing trips. About 87% of Specialists said they were moderately to very interested, compared to 78% of Intermediates and 57% of Novices.

#### *Preferred Wildlife*

Subjects were asked to indicate their degree of interest in viewing various types of wildlife. Ten categories of wildlife were presented; subjects were most interested in viewing large mammals and birds of prey, with wildflowers being the third most preferred category (Table 2). Specialists and Intermediates alike show significantly more interest than Novices in all 10 types of wildlife, and Specialists show significantly more interest than Intermediates in six—waterfowl, upland game birds, fish, butterflies/other insects, reptiles/amphibians, and wildflowers. Butterflies/other insects and reptiles/amphibians were the only two categories that failed to reach the 50% level of interest for Novices and Intermediates; these two categories are also the least preferred of the Specialists, though a majority did indicate interest in viewing them.



**Table 2**  
**Percent of Respondents Indicating That They Are**  
**"Moderately" or "Very" Interested in Viewing Various Types**  
**of Wildlife, and (in Parentheses) the Percent of**  
**Respondents That Reported Observing Wildlife.<sup>1</sup>**

Type of wildlife	<u>Novices</u> n = 1528	<u>Intermediates</u> n = 452	<u>Specialists</u> n = 221	Chi-square
interested in large mammals (observed)	94 <sup>a</sup> (72 <sup>a</sup> )	97 <sup>b</sup> (83 <sup>b</sup> )	97 <sup>b</sup> (86 <sup>b</sup> )	23.5** (41.3**)
birds of prey (observed)	87 <sup>a</sup> (51 <sup>a</sup> )	91 <sup>b</sup> (66 <sup>b</sup> )	96 <sup>b</sup> (79 <sup>c</sup> )	46.8** (76.8**)
wildflowers (no data)	77 <sup>a</sup>	86 <sup>b</sup>	92 <sup>c</sup>	64.5**
waterfowl (observed)	72 <sup>a</sup> (57 <sup>a</sup> )	82 <sup>b</sup> (71 <sup>b</sup> )	89 <sup>c</sup> (84 <sup>c</sup> )	59.6** (70.2**)
small mammals (observed)	68 <sup>a</sup> (55 <sup>a</sup> )	78 <sup>b</sup> (65 <sup>b</sup> )	80 <sup>b</sup> (75 <sup>c</sup> )	46.7** (36.3**)
upland game birds (observed)	66 <sup>a</sup> (18 <sup>a</sup> )	77 <sup>b</sup> (24 <sup>b</sup> )	84 <sup>c</sup> (31 <sup>c</sup> )	81.2** (22.9**)
songbirds (observed)	66 <sup>a</sup> (34 <sup>a</sup> )	73 <sup>b</sup> (42 <sup>b</sup> )	81 <sup>b</sup> (55 <sup>c</sup> )	37.9** (32.3**)
fish (no data)	57 <sup>a</sup>	62 <sup>b</sup>	69 <sup>c</sup>	19.5**
butterflies/other insects (observed)	42 <sup>a</sup> (31 <sup>a</sup> )	49 <sup>b</sup> (36 <sup>a</sup> )	60 <sup>c</sup> (44 <sup>b</sup> )	37.8** (11.0**)
reptiles and amphibians (observed)	39 <sup>a</sup> (9 <sup>a</sup> )	46 <sup>b</sup> (17 <sup>b</sup> )	59 <sup>c</sup> (19 <sup>b</sup> )	69.9** (27.0**)

<sup>1</sup>statistical tests applied to full range of responses

\*p < .05; \*\*p < .01

<sup>a,b,c</sup>segments with different superscripts are significantly different at p < .05

### *Observed Wildlife*

Respondents were also asked to report wildlife they observed while in Montana. For each of the eight types of wildlife reported, significantly more Specialists than Novices indicated they had seen at least one species in that category (Table 2). Specialists also reported seeing more types of wildlife than Intermediates—differences were significant for five of the eight types of wildlife reported. For all groups, the type of wildlife most commonly seen was large mammals, followed by waterfowl; reptiles and amphibians were the least frequently observed species for all groups.

### *Types of Information*

Subjects were presented with a list of 12 types of information related to wildlife viewing, and asked to choose the four types they would find most useful. The proportions of groups choosing each type of information are significantly different for nine of the 12 types of information (Table 3). Intermediates differ from Novices on six types of preferred information and from Specialists on four types; Specialists differ from Novices on five types of information.

All groups agreed that the three types of information they would find most useful are 1) best locations for viewing wildlife; 2) types of wildlife that may be seen in a region; and 3) best times to view wildlife. Specialists showed more interest in information on the natural history of species, the habits of wildlife, and wildlife management activities than did either of the other two groups. Novices showed more interest in information on the best times to view wildlife than did Intermediates or Specialists.

### *Information Sources*

When asked how likely they would be to obtain information on wildlife viewing from 13 different sources, Specialists indicated they are more likely than Novices to obtain information from 10 of the sources, particularly wildlife viewing field guides, self-guided wildlife viewing trails, and wildlife information radio broadcasts; Intermediates are also more likely than Novices to obtain information from 11 of the 13 sources (Table 4). Specialists are more likely than Intermediates to obtain information from four sources—self-guided viewing trails, wildlife viewing guides, radio broadcasts, and brochures obtained through the mail, while Intermediates are more likely than either of the other two groups to obtain information from visitor centers at wildlife viewing locations. None of the three groups expressed much interest in audio or video tapes as a source of information.

**Table 3**  
**Percent of Respondents Choosing Each Type of Information**  
**as One of Four Most Useful Types of Information**

Type of information	<u>Novices</u> n = 1528	<u>Intermediates</u> n = 452	<u>Specialists</u> n = 221	Chi-square
the best locations to view wildlife	75 <sup>a</sup>	74 <sup>a</sup>	67 <sup>b</sup>	7.7*
the types of wildlife which can be seen in a region	60 <sup>a</sup>	52 <sup>b</sup>	57 <sup>ab</sup>	7.3*
the best times to view wildlife	54 <sup>a</sup>	42 <sup>b</sup>	38 <sup>b</sup>	38.8**
how to be most successful in viewing wildlife	35	37	32	1.1
various wildlife habitats in Montana	33 <sup>a</sup>	37 <sup>b</sup>	33 <sup>ab</sup>	7.0*
the habits of wildlife	32 <sup>a</sup>	32 <sup>a</sup>	39 <sup>b</sup>	6.7*
threatened and endangered species in Montana	28	31	27	2.5
wildlife photography tips	21 <sup>a</sup>	27 <sup>b</sup>	24 <sup>ab</sup>	9.7**
the natural history of wildlife species	20 <sup>a</sup>	22 <sup>a</sup>	32 <sup>b</sup>	26.6**
wildlife viewing ethics (how to view wildlife responsibly)	17 <sup>a</sup>	24 <sup>b</sup>	24 <sup>ab</sup>	17.5**
Montana's wildlife management activities	11 <sup>a</sup>	14 <sup>b</sup>	25 <sup>c</sup>	30.5**
organized nature tours	11	13	10	3.4

\*p < .05; \*\*p < .01

<sup>a,b,c</sup>segments with same superscripts are not significantly different at p < .05

### *Setting Attributes*

In order to examine potential differences among segments relative to preferred wildlife-viewing settings, subjects were asked to indicate the desirability of 17 biophysical, social and managerial setting attributes at

**Table 4**  
**Percent of Respondents Indicating that it is "Moderately"**  
**or "Very" Likely that They Would Obtain Information on**  
**Wildlife-viewing from Each of These Sources.<sup>1</sup>**

Information source	Novices n = 1528	Intermediates n = 452	Specialists n = 221	Chi-square
visit designated areas to view wildlife	85 <sup>a</sup>	92 <sup>b</sup>	86 <sup>b</sup>	12.1**
brochures at visitor centers	83	87	82	5.6
stop at visitor centers at wildlife-viewing locations	81 <sup>a</sup>	88 <sup>b</sup>	80 <sup>a</sup>	9.5**
read signs along trails	76 <sup>a</sup>	87 <sup>b</sup>	89 <sup>b</sup>	28.3**
hike on a self-guided wildlife-viewing trail	66 <sup>a</sup>	81 <sup>b</sup>	88 <sup>c</sup>	102.8**
send for maps about places to view wildlife	57 <sup>a</sup>	63 <sup>ab</sup>	67 <sup>b</sup>	20.2**
wildlife-viewing field guides	45 <sup>a</sup>	69 <sup>b</sup>	76 <sup>c</sup>	122.4**
guided tour with naturalist	37 <sup>a</sup>	49 <sup>b</sup>	51 <sup>b</sup>	29.5**
send for wildlife brochures	35 <sup>a</sup>	45 <sup>b</sup>	49 <sup>c</sup>	31.5**
tune to local wildlife information radio broadcasts	34 <sup>a</sup>	46 <sup>b</sup>	56 <sup>c</sup>	59.3**
rent video tapes for home	18 <sup>a</sup>	22 <sup>b</sup>	27 <sup>b</sup>	16.5**
rent audio tapes for auto tour	13 <sup>a</sup>	14 <sup>b</sup>	12 <sup>a</sup>	13.8*
rent audio tapes for home	8 <sup>a</sup>	12 <sup>b</sup>	17 <sup>b</sup>	14.1**

<sup>1</sup>statistical tests applied to full range of responses

\*p < .05; \*\*p < .01

<sup>a,b,c</sup>segments with different superscripts are significantly different at p < .05

their "ideal" wildlife viewing site. Differences among groups are significant for 16 of the 17 items; the only item on which the groups did not differ was in their preference for interpretive signs and exhibits (Table 5). Differences between Novices and the other two groups are significant for most attributes directly related to wildlife (e.g. type and number of animals). Specialists showed slightly more interest than Intermediates or Novices in seeing large quantities of wildlife, while Intermediates showed more interest than Novices

**Table 5**  
**Percent of Respondents Indicating That These Setting**  
**Attributes Would Be "Moderately" or "Very" Desirable at**  
**Their "Ideal" Wildlife-viewing Site.<sup>1</sup>**

Setting attribute	Novices n = 1528	Intermediates n = 452	Specialists n = 221	Chi-square
seeing wildlife at close range, assuming it's safe	87 <sup>a</sup>	92 <sup>b</sup>	87 <sup>ab</sup>	7.2*
opportunity to see rare or endangered species	80 <sup>a</sup>	86 <sup>b</sup>	85 <sup>c</sup>	35.1**
opportunity to see many different types of wildlife at one location	78 <sup>a</sup>	82 <sup>b</sup>	80 <sup>b</sup>	9.3**
opportunity to see lots of wildlife, even if they are all the same kind	75 <sup>a</sup>	78 <sup>a</sup>	81 <sup>b</sup>	11.8**
nature trails	64 <sup>a</sup>	77 <sup>b</sup>	83 <sup>c</sup>	75.8**
interpretive guide books, maps, or brochures	74 <sup>a</sup>	81 <sup>b</sup>	79 <sup>b</sup>	19.2**
interpretive signs/exhibits	75	77	74	5.7
a visitor center	71 <sup>a</sup>	68 <sup>a</sup>	61 <sup>b</sup>	12.9**
viewing platforms/blinds	55 <sup>a</sup>	59 <sup>b</sup>	57 <sup>ab</sup>	8.1*
guided nature tours	35 <sup>a</sup>	45 <sup>b</sup>	39 <sup>ab</sup>	19.3**
few people at area	71 <sup>a</sup>	77 <sup>b</sup>	84 <sup>c</sup>	53.4**
facilities such as picnic tables and restrooms	79 <sup>a</sup>	69 <sup>b</sup>	61 <sup>c</sup>	29.2**
absence of any facilities	29 <sup>a</sup>	35 <sup>b</sup>	42 <sup>c</sup>	16.5**
being in an area where vehicles are not allowed	46 <sup>a</sup>	60 <sup>b</sup>	72 <sup>c</sup>	90.5**
having road access all the way in to the area	64 <sup>a</sup>	59 <sup>b</sup>	42 <sup>c</sup>	32.3**
campground without hookups	44 <sup>a</sup>	51 <sup>b</sup>	56 <sup>b</sup>	14.9**
campground with hookups	52 <sup>a</sup>	43 <sup>b</sup>	32 <sup>c</sup>	32.0**

<sup>1</sup> statistical tests applied to full range of responses

\*p < .05; \*\*p < .01

<sup>a,b,c</sup> segments with different superscripts are significantly different at p < .05

in seeing wildlife up close. Both Specialists and Intermediates showed more interest than Novices in seeing rare or endangered wildlife.

The three groups all differed from one another on the desirability of eight attributes—the opportunity to see rare/endangered species, presence of nature trails, presence of facilities such as picnic tables and restrooms, seeing few other people at the site, a complete absence of facilities, the area being closed to motor vehicles, having road access into the area, and having campgrounds with RV hookups. Specialists found nature trails, an absence of facilities, seeing few other people, and prohibiting motor vehicles to be more desirable than did Intermediates, who in turn found them more desirable than did Novices. Novices found facilities such as picnic tables and restrooms, road access into the area, and campgrounds with hookups to be more desirable than did Intermediates, who in turn found them to be more desirable than did Specialists.

Visitor centers at wildlife-viewing sites were judged more desirable by Novices and Intermediates than by Specialists, while interpretive maps, guidebooks and brochures were judged more desirable by Intermediates and Specialists than by Novices. Intermediates found both viewing platforms/blinds and guided nature tours more desirable than did Novices. Finally, campgrounds without RV hookups were preferred by Intermediates and Specialists over campgrounds with RV hookups, while Novices preferred campgrounds with RV hookups.

## **Discussion**

With some notable exceptions, the three specializations groups differed significantly from one another in their preferences for types of wildlife to view, types of wildlife-viewing information desired, sources of information, setting attributes, and observed wildlife. Regarding preferences for types of wildlife to view, large mammals and birds of prey are most preferred by all three groups. This finding is consistent with that of Manfredo and Larson (1993) who reported that in Colorado, eagles were rated most important for viewing by all four experience typology groups in their study.

Differences among the three segments for large mammals and birds of prey are minor in practical terms. Differences among the segments are more pronounced, however, for the “lower profile” types of wildlife, particularly reptiles and amphibians, butterflies, and fish, as well as small mammals, upland game birds, and waterfowl; Specialists show significantly more interest in these categories of wildlife than do Novices. Wildlife managers may find it important to educate the public about the significance of less popular species, but in general, wildlife-viewing sites that emphasize lower profile species should be developed primarily with Specialists in mind, since they are clearly most interested in those species and most likely to visit those sites.

Specialists observed more wildlife than did Novices, almost certainly due to greater effort being made and greater skill. But what may be of more interest is examining the differences not across segments, but between wildlife preferred and wildlife observed within a segment. For example, for all three segments, the largest difference between the type of wildlife people were interested in viewing, and the proportion who succeeded in seeing that type of wildlife, is for upland game birds; on average, only 32% of those who wanted to see upland game birds actually saw one. Perhaps wildlife-viewing sites that included upland game bird habitat could be developed to meet this interest; or if such sites already exist, but currently do not mention or emphasize upland game birds, information on where to see and how to identify upland game birds could be highlighted.

A similar pattern was observed regarding both songbirds and birds of prey—a large proportion of each segment showed an interest in observing songbirds and birds of prey, but much smaller proportions reported seeing them. Since opportunities for viewing both songbirds and birds of prey are relatively abundant in Montana, the discrepancy may be more a function of visitors not knowing where to look for songbirds, or simply not being able to recognize a bird of prey. Information on where to look for songbirds, and how to recognize birds of prey might be desirable and helpful.

Differences among the three segments are less pronounced regarding preferences for types of information. All three groups agreed on the top three types of information—best locations, types of wildlife to see, and best times; information on wildlife habitats, viewing success, and wildlife habits also appear moderately desirable. Although many of the differences among groups are statistically different, often these differences are relatively minor in practical terms.

Despite the use of different conceptual frameworks, Specialists in this study showed similarities to the High-Involvement Experience group described by Manfredo and Larson (1993); both showed more interest in information on wildlife habits, natural history of species, and wildlife management activities than did other groups in either study. Our Specialists, however, were less likely than Novices to choose information on the best times and locations to view wildlife, while Manfredo and Larson's High-Involvement group was more likely than the Occasionalist and Generalist groups to choose this information.

Few subjects in any of the three groups showed a preference for information about organized nature tours. This has implications for ecotourism operators. Montana's wildlife is arguably one of its prime tourist attractions, so it is somewhat puzzling why fewer nonresidents were interested in information on organized nature tours than in any of the other types of information. Perhaps a perceived abundance of wildlife creates the impression that visitors can view wildlife easily and without needing any special guidance. Ecotourism operators may need to tailor their marketing so that potential customers are attracted to their services

not solely on the basis of needing help to locate and view wildlife, but because organized or guided viewing services can also provide interesting and educational information about wildlife habitats, natural history, threatened and endangered species, photography tips, and so on.

Differences among the three segments on preferences for information sources are quite consistent, with Specialists and Intermediates showing a greater likelihood than Novices to seek out 11 of the 13 sources of information, and Specialists showing a greater likelihood than Intermediates to obtain information from four sources. Information sources with particularly pronounced differences among groups include self-guided viewing trails, field guides, and radio broadcasts.

Intermediates are a logical group toward which particular effort should be made to provide information—they've shown interest in wildlife viewing, but are probably not very knowledgeable yet; Specialists may already possess much of the basic knowledge, and Novices may lack interest in much information beyond the where to look, when to look, and what to see. Of course, we need to provide information to all types of visitors, but the amount, type, and source of information may be tailored to each segment.

Novices and Intermediates indicated that visiting designated wildlife viewing areas, stopping at visitor centers at such areas, and picking up brochures at those visitor centers were their three most preferred sources of information, while Specialists also ranked these sources highly. Information on where to look for wildlife, the best times to view wildlife, and the types of wildlife that can be found in certain areas, as well as information on where to look for songbirds and how to recognize birds of prey (because of the large discrepancy in all three groups between desire to see these and success at seeing them), can be provided here.

Specialists and Intermediates also indicated a strong preference for hiking self-guided viewing trails and reading signs along such trails as sources of information. Signs and brochures for self-guided trails may be the most appropriate place to provide specialized information on wildlife habitat, natural history, and management activities. While Manfredo and Larson (1993) suggest that radio transmitters be used to broadcast wildlife information to Occasionalists demanding low-effort experiences, we found that our Novices did not show a strong preference for local radio broadcasts as a source of information, while a majority of Specialists did show a moderately strong preference for such broadcasts. If Novices (based on specialization) are similar to Occasionalists (based on desired experience outcomes), our findings suggest that local radio broadcasts may not be utilized by these visitors as much as by more specialized or involved visitors.

Another aspect of the wildlife-viewing experience on which the three groups show distinct differences is preference for on-site biophysical, managerial and social setting attributes. Differences between Specialists and Novices are particularly pronounced on items describing certain



facility developments; in general, Novices are more likely to find facility development desirable. In particular, differences in desirability were found for facilities such as picnic tables and restrooms, road/vehicle access, and degree of campground development (e.g. RV hookups); the last two could almost be considered defining differences. A majority of Novices find road access into the wildlife-viewing site desirable; conversely, a minority find motor vehicle prohibitions desirable. A majority of Specialists, on the other hand, prefer having wildlife-viewing sites closed to motor vehicles, and a minority find road access into their ideal site desirable. Significantly more Specialists than Novices (though still a minority) feel the absence of facilities is desirable. The only development that Specialists found significantly more desirable than did Novices was nature trails. Specialists are also more likely to find the presence of few people at the area a desirable attribute, although a majority of all three groups agreed.

Our findings on preferred setting attributes are consistent with previous research. Virden and Schreyer's (1988) study reported similar results for the relationship between backcountry hiking specialization and preferences for setting attributes. They concluded that specialized hikers' preferences could be summarized as "I want a rugged, primitive environment, free of conveniences, with less social contact," whereas novices' preferences are characterized by "I don't feel very comfortable in a wild, primitive environment; directional signs, available firewood, outhouses, and easy-to-follow trails contribute more to my overall experience"—a conclusion consistent with that of the current study.

While Manfredo and Larson (1993) did not directly examine preferences for such on-site setting attributes, using an experience-based approach they too reached conclusions that seem consistent with the current study, recommending that High-Involvement experiences could be facilitated by maintaining a low level of site development and low levels of on-site use density, while higher levels of development (visitor and interpretive centers, wildlife exhibits) could be provided for Occasionalist and Generalist experiences.

Given the preferences of Specialists for lower levels of development, sites emphasizing less popular wildlife species should have fewer facilities designed for visitor convenience, but may include facilities such as nature trails to improve wildlife viewing. Given the preferences of Specialists for sites where vehicles are prohibited, some sites should be developed and managed as walk-in sites.

As have previous studies that have classified recreationists on the basis of specialization, our results suggest that managers can use a specialization typology to allocate, develop and manage wildlife viewing opportunities to provide a spectrum of settings, ensuring that the needs of a diverse public are met. Additional questions still remain, however, about using specialization as a framework not only for classifying recreationists, but also for planning and managing recreation settings. For example, despite

using different conceptual frameworks, there are some striking similarities between the results of this study and those of Manfredo and Larson (1993). Their suggestions for information preferences and site development for High-Involvement visitors, as well as for Generalists and Occasionalists, closely reflect what our results suggest for Specialists and Novices, respectively. This suggests a relationship between desired experience outcomes and specialization, a relationship that has not been examined in great detail. Chipman and Helfrich (1988) found differences in motivations related to specialization, as did McFarlane (1994), who suggested that "a few indicators of ongoing involvement may be sufficient to predict desired experiences." Perhaps an explicit examination of experience outcome-based management and specialization together is called for. What are their similarities and differences? Can they be conceptually united?

Finally, the limitations of this study must be recognized. Subjects were not sampled from all highways entering Montana, therefore it is possible that nonresidents entering on less-traveled highways may have different preferences. Our response rate was 48%, which is reasonably good given that we did not conduct follow-up contacts; however this does suggest the possibility of non-response bias.

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