



Recreation Use Allocation: Alternative Approaches for the Bob Marshall Wilderness Complex

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Abstract—The allocation of recreation use is a task that has challenged wilderness managers throughout the National Wilderness Preservation System for nearly two decades. This note reviews and evaluates approaches for allocating wilderness recreation use between commercially outfitted, institutionally outfitted, and nonoutfitted visitors to wildlands. Of the 17 identified approaches to allocation, 11 of those are sufficiently defined to allow a comparative evaluation to determine how these approaches are able to address eight wilderness recreation allocation goals. The analysis results in a relative ranking of alternatives from most suitable to least suitable for addressing the stated goals. Although this evaluation was conducted specifically for one area (the Bob Marshall Wilderness Complex in Montana), the methods reviewed and results obtained are likely to be applicable to other wildernesses and wildland recreation areas with some site-specific modifications.

Keywords: institutional outfitting, wilderness outfitting, recreation policy, wildlands management

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Recreation use allocation is a pressing issue at many Federally managed wilderness areas throughout the United States. The question of how to make recreation use allocation decisions to distribute available opportunities among outfitted (including institutional and commercial) and nonoutfitted users, has challenged managers and often has led to controversy. For instance, in Montana the Forest Service has been indecisive on the issue of recreation use allocation in the Bob Marshall Wilderness Complex (BMWC) for more than two decades. Because of concerns for social and resource impacts, in 1972, a ban was placed on the issuance of any new outfitter permits for this wilderness complex. This initial ban was supplemented in 1980 by an informal moratorium on expansion of all existing outfitter operations. The 1987 Recreation Management Direction (United States Forest Service 1987) for the BMWC formalized the moratorium pending a decision on desirable outfitted use levels. This extended ban has been in effect for more than 15 years and awaits resolution of the initial issue regarding outfitter-provided recreation use levels, as well as the more basic question of how other uses and wilderness conditions would be influenced by changes in outfitted use.

In the meantime, the Limits of Acceptable Change planning system (LAC) has been implemented, establishing baseline conditions, objective limits on impacts from all recreation use, and an active monitoring program. LAC guides managers to focus on the impacts of visitors, not purely on their numbers. After several years of monitoring, managers may now have the ability to anticipate how current conditions will be affected by changes in outfitter services.

Since implementation of the 1980 moratorium, the BMWC managers' group has frequently acknowledged the need to address the recreation allocation issue, particularly the need to develop a definitive policy for determining outfitted use. (The BMWC managers' group includes USDA Forest Service representatives from

each of the five Forest Service Ranger Districts from four National Forests that share responsibility for management of the BMWC). As an issue of particular concern, the managers have recognized the need to identify an appropriate method (or approach) to allocate outfitter permits that considers the demand and impacts of the commercially outfitted, the institutionally outfitted, and nonoutfitted segments on the wilderness resource. While progress has been made in addressing the management of recreation use allocation since the 1972 ban, the original reasons for implementing the moratorium remain, and new ones have arisen. Demand for access by current outfitting permit holders continues to grow, requests for new permits from commercial as well as institutional outfitters are increasing, overall use of the BMWC steadily rises, and a method for distributing use between the outfitted and nonoutfitted public has not been identified.

This paper includes a review of 17 approaches to recreation use allocation, identification of allocation goals defined by managers of the BMWC, and the results of a comparative evaluation of the potential for the approaches to achieve the defined allocation goals. This review should provide useful insight to wildland managers facing similar wilderness management decisions.

Recreation use allocation is a term that has not been universally defined and can include a variety of subtle variations in meaning, depending on the situation in question. For the purposes of this paper, recreation use allocation is defined as the deliberate distribution of recreation use opportunities between the commercially outfitted, the institutionally outfitted, and the nonoutfitted sectors of the public. More specifically, it is the process by which a public land management agency determines what proportions of total potential use will be distributed to these various groups (or user categories) utilizing public lands for recreation.

Methods

To comparatively evaluate alternative approaches to recreation use allocation in the BMWC, methods were developed to identify alternative approaches, to determine goals for wilderness allocation in the BMWC, and to evaluate the alternatives. A more detailed discussion of the methods utilized can be found in Cable (1996).

Identification of Alternative Allocation Approaches

A total of 17 alternative approaches to recreation use allocation were identified through the following three search methods: (1) review of published professional and academic literature in the recreation management, economics, and resource policy disciplines;

(2) requests for information regarding proposed and existing recreation use allocation systems from public land managers throughout the United States; and (3) review of unpublished public land management agency documents regarding recreation use allocation obtained from land managers. Once the alternatives were compiled, the list was further refined to include 11 of these alternatives, excluding those that were determined by the BMWC managers to be clearly unimplementable because of feasibility or suitability constraints (see Cable 1996 for complete discussion of exclusionary criteria).

Determination of Recreation Use Allocation Goals

The BMWC managers' group utilized an interactive multistep process and five sources of information to determine goals for the allocation of recreation use opportunities in the BMWC. The five sources of information were:

1. Example allocation goals from existing recreation use allocation systems in other National Forests and National Parks.
2. Example allocation goals (both theoretical and applied) from the recreation management literature.
3. Overall wilderness management goals for the BMWC as defined by the BMWC Recreation Management Direction—a document that defines management prescriptions for the BMWC based on LAC-generated indicators and standards.
4. A list of questions formulated by the BMWC managers used to define the recreation use allocation issue in the BMWC.
5. Allocation goals identified by the public in response to a request for comments conducted specifically for this study.

After thorough review of all information sources, the BMWC managers compiled draft and final lists of allocation goals based on professional judgment about suitability.

Evaluation of Alternatives

The evaluation of alternatives was conducted using a multicriteria decisionmaking model as explained by Trostler (1988) and based on the work of Arrow and Raynaud (1986). The model includes the following three sequential steps:

Step 1—Ranking alternative allocation approaches on their ability to achieve the allocation goals (called the “preliminary ranking”).

Step 2—Creating a matrix to compare the relative success of each alternative in its ability to achieve the goals (called an “outranking matrix”).

Step 3—Identifying, in ranked sequential order from

best to worst, the relative success of the alternative allocation approaches in achieving the goals (called the “final ranking”).

In addition to the above steps, this application of the Trostler/Arrow and Raynaud model assumes that: (a) there is equal “distance” between each of the ranked alternatives in both the preliminary and final rankings where “Distance” refers to the qualitative space between alternatives in the rankings (for example, in a sequential ranking from best to worst, each successive alternative is an equal amount worse than the previous ranked alternative); (b) the goals are independent from each other; (c) no goal is paramount over the others, nor must it be achieved by an alternative, for it to be further considered; and (d) all goals are equally important. The model, as explained by Trostler, includes the option to weight the goals to indicate their relative importance. The BMWC managers’ group, however, decided not to weight the goals in this analysis and to consider them all of equal importance.

To begin the evaluation of alternatives (step 1 above), each allocation approach was ranked according to its relative ability to achieve each unweighted goal. Following Trostler (1988, p. 829), each alternative was ranked according to each of the goals by “try[ing] to make assumptions which seem reasonable or seem to reflect commonly held beliefs...” The preliminary ranking of each alternative allocation method was defined according to the discretion of the BMWC managers’ group utilizing input from:

1. Two institutional outfitters
2. Two commercial outfitters
3. Two members of the nonoutfitted public
4. Two academics, one involved in recreation use allocation studies and the other in studies of biodiversity.

Next, the results were entered into a matrix indicating the relative success of each alternative in its competition against the other alternatives, similar to a round-robin tournament format (step 2). The alternatives comprised both the columns and rows of the matrix. The number of times that each alternative was successful in being ranked higher than each other alternative at achieving the goals was summed and entered in the appropriate location in the matrix. The completed matrix summarized the results of each competition for achieving each goal, between each of the alternatives. After the matrix was created, a final ranking was prepared that reflected the overall success of each alternative allocation approach in achieving all the goals (step 3). Through careful analysis of the outranking matrix, the alternatives were sequentially removed from the matrix and placed in the final ranked order according to the overall number of successful contests of each alternative, over the others, in achieving the goals.

Results

Alternative Allocation Approaches

The 17 approaches for allocation between groups are listed in table 1. This table defines each approach, its level of development (proposed, theoretical, or applied), the source of the approach, and examples of locations where it has been used, if applicable. The allocation approaches are alternative contexts for making recreation use decisions between commercially outfitted, institutionally outfitted, and nonoutfitted sectors of the public. The approaches reviewed vary significantly in their design. Some approaches can more accurately be referred to as methods, procedures, processes, or even paradigms. However, because of the variability in their design and in their means of implementation, they are collectively referred to as alternative approaches. Additionally, not all of the approaches adhere strictly to the allocation definition used in this text. For example, the Spatial and Temporal Zoning approaches allocate use according to where and when, rather than to a specific quantity of use, but still achieve the same objective of distributing use between groups. Also, the No Allocation with Equal Opportunity and Freedom of Choice approaches deliberately do not allocate use, but are alternatives that still manage use.

Of the 17 alternatives listed in table 1, the following 11 were determined by the BMWC managers’ group to be potentially applicable, and were selected for further evaluation: Historical Use, Even-Split, Needs Assessment, Objective Analysis and Subjective Decision, Public Opinion, Spatial Zoning, Temporal Zoning, Economic Impact, Even-Pool Variation of an Even-Split, Freedom of Choice, and No Allocation with Equal Opportunity.

Recreation Use Allocation Goals

Allocation goals can be placed into two categories: those based on allocation theory and those driven by applicability for use in the field by land managers. Theoretical goals address the general objective of resource allocation—distributive justice—while applied goals relate to both the social and resource concerns of wilderness management. Detailed discussion of distributive justice theory, in regard to recreation use allocation, can be found in Cable (1996). The BMWC managers’ group identified eight applied recreation use allocation goals. The allocation approach corresponding to each of these eight goals should:

1. Ensure protection of wilderness resource values, including, but not limited to, LAC standards. LAC standards refer to the “Limits of Acceptable Change” management strategy used in the BMWC. The LAC system requires management of the wilderness according

Table 1—Approaches for allocation between groups.

Approach	Description	Level of development	Source^a	Example locations used
Historical Use	Assignment of use shares is made according to historic use of the area based on a variety of formulas; for example, average of highest 2 years of annual actual use during last 5 years (often used with Needs Assessment).	Applied	A,B,C	Beaverhead National Forest (NF); Wallowa-Whitman NF; Gallatin NF; Grand Canyon National Park (NP); Smith River, Lewis and Clark NF
Even-Split	Use is evenly split between groups; for example, 50/50 when there are two groups, or 33/33/33 when there are three groups.	Published and applied	B,C,D, E,F	Tongass NF; Chugach NF
Needs Assessment	Public need for use by different groups is determined according to assessment of various criteria; for example, current resource conditions, skills & equipment, knowledge, safety, management objectives.	Unpublished theoretical and applied	G,H	proposed Roosevelt Ranger District (RD), Ashley NF; Klamath RD, Winema NF
"Objective" Analysis & Subjective Decision ^b	Based on "objective" analysis of a variety of defined factors, a managerial decision is made regarding use assigned to a group, or each group.	Applied	I,J,K	Palisades RD, Targhee NF; Olympic NF; Payette NF; Jicarilla RD, Carson NF; Tonto NF; Bitterroot NF; Yellowstone NP; Jackson RD, Bridger-Teton NF
"Marketplace"	The shares of use assigned to groups are based on use proportions observed during several years when no regulatory constraints existed on the amount of use.	Unpublished theoretical and applied	L	Bridgeport RD, Toiyabe NF
Value-Based Shares	Judgments are made about the relative social value of recreation opportunities provided by each group, and shares of use are assigned accordingly to ensure adequate opportunities for each.	Proposed for discussion	B,M,I	None identified
Relative Resource Impact	Each group is assigned shares of use according to their relative contribution to total impact based on an analysis of use levels and impact levels.	Published theoretical & proposed for discussion	B,M,N, O	None identified
Test Cases ^c	Develop a test case resource area and determine relative demand between groups for use in an unregulated situation, then use those shares to determine use allocation in other areas.	Published theoretical	D	None identified
Public Opinion ^c	Allot shares to groups according to public opinion process that would determine public preferences.	Published theoretical	B,D	None identified
Spatial Zoning ^c	Assign use to groups in specific areas rather than by shares of use over the entire area.	Published theoretical	B,C,D	None identified
Temporal Zoning ^c	Assign use to groups for specific times of year, rather than by shares of use over the entire area.	Published theoretical	B,C,D	None identified
Legislative Direction ^c	Assign use according to legislative mandate of shares for each group.	Published theoretical	B,D	None identified
Economic Impact ^c	Assign use according to economic impact of groups on local communities adjacent to resource area.	Published theoretical	D	None identified
Even-Pool Variation ^c	Variation of Even-Split technique, but unused portions of shares to be made available to other groups, with annual default to 50/50 (if two groups).	Published theoretical	B,C,D	None identified

(con.)

Table 1 (Con.)

Approach	Description	Level of development	Source ^a	Example locations used
Percentage Disappointment	Allot use each year such that by a given date the number of applicants for each sector (group) is known and an equal proportion of each sector receives a permit resulting in an equal percentage of denials, or disappointment, to each group.	Published theoretical	B,C,D	None identified
Freedom of Choice ^d	Does not allocate use among groups, but requires all users to gain a permit, then the individual chooses whether to use the services of an outfitter or go on their own.	Published theoretical, awaiting application	B,C,D, N,P,Q	Flathead River, Flathead NF
No Allocation with Equal Opportunity ^e	Does not allocate use between groups and allows equal opportunity to all users with equal management prescriptions; outfitters are permitted but are not allocated priority use days, do not have reserved camps or grazing permits—essentially treated the same as the nonoutfitted public and must comply with the same regulations.	Proposed for discussion	R	None identified

^aSources: A Beaverhead NF 1986 J Payette NF n.d.
 B Wallace n.d. K Jicarilla RD 1995
 C Cruz and Jiron 1994 L Richter 1985
 D McCool and Utter 1981 M Proposed by University of Montana Wilderness Institute, personal correspondence, August 31, 1995
 E Tongass NF 1991 N Personal discussion with Bill Chaloupka, University of Montana Professor of Political Science, September 28, 1995
 F Shelby 1991 O Penner 1985
 G Barker 1994 P Stokes 1991
 H Dillon Resource Area 1993 Q Leaper 1991
 I Targhee NF 1992 R Proposed by Jerry Burns, Lincoln Ranger District, Helena NF, personal correspondence, received September 7, 1995

^bObjective Analysis & Subjective Decision includes “objective” analysis of a variety of defined factors. While it is referred to as “objective”, the author recognizes there are subjective aspects of the objective component of this approach—such as decisions made regarding what data to collect, and interpretation by individuals while collecting data.

^cDeveloped with intended application being river use.

^dWhile Freedom of Choice is not a method to allocate use between groups, it is included in the discussion because it achieves the same ultimate objective of regulating access and use of the resource between outfitted and nonoutfitted users.

^eNo Allocation with Equal Opportunity is not an approach to allocate use between groups, but is included since similar to Freedom of Choice, it achieves the same ultimate objective of regulated access and use of the resource between outfitted and nonoutfitted users.

to prescriptions intended to achieve minimally impacted resource conditions. Additional information regarding LAC standards can be found in the Bob Marshall, Great Bear, and Scapegoat Wildernesses Recreation Management Direction published by the Flathead, Lolo, Helena, and Lewis & Clark National Forests (1987).

2. Allow for a diverse range of wilderness-dependent recreation activities for all users in a variety of settings and at various times.

3. Establish use shares for the commercially and institutionally outfitted publics.

4. Provide the opportunity for high quality wilderness-dependent recreation experiences for all users, as defined by the LAC standards.

5. Consider the public need for outfitting services. It is important to distinguish the difference between public need and public demand. One Forest Service wilderness manager (Barker 1994) defines “public need” as “need identified by the Forest Service which

is deemed essential or required for the well-being of the public and to meet the intent of the Forest’s mission to manage and protect wilderness resources, provide for public safety, and provide high quality public recreation services.” Public demand is considered to be one component of public need and reflects public requests for outfitting services (Merigliano and Morton 1996).

6. Consider historic use levels.

7. Be flexible and dynamic in response to public need.

8. Conform with the principle of minimum regulation. The “principle of minimum regulation” refers to one of 12 wilderness management principles used by the Forest Service throughout the National Wilderness Preservation System. The exact wording of the principle is, “Control and reduce the adverse physical and social impacts of human use in wilderness through education or minimum regulation” (United States Forest Service 1987).

Ranking Of Alternatives

Completion of the evaluation method described above results in the following final ranking (from best to worst) of alternatives in their ability to achieve the eight allocation goals:

- 1st Objective Analysis and Subjective Decision
- 2nd Needs Assessment
- 3rd Public Opinion
- 4th Historical Use
- 5th Economic Impact
- 6th Even-Pool Variation
- 7th Even-Split
- 8th (tie) Spatial Zoning, Temporal Zoning, Freedom of Choice, and No Allocation with Equal Opportunity

Cable (1996) explains the preliminary rankings and outranking matrix that provide more in-depth review of the successes of each alternative in achieving the individual goals.

Discussion and Conclusions

The final ranking of alternatives indicates that Objective Analysis and Subjective Decision is the alternative most successful in its ability to achieve the allocation goals. This approach has often been applied, relying on the tradition of professional discretion based on good information when making management decisions. Second place is held by the Needs Assessment alternative. While a relative newcomer to the field of recreation use allocation, the Needs Assessment alternative holds good potential for future application when the situation warrants greater public involvement and review of management actions. These first and second place finishes reflect the consistently high ranking of these two alternatives over all the others. In the preliminary ranking they were ranked in the top three positions for all goals in their competition against other alternatives. This result reflects the high frequency with which these alternatives will achieve, or will provide opportunity to achieve, all the goals compared to the other alternatives.

The remaining nine alternatives, ranked in the third through eighth positions, show decreasing performance in their ability to achieve the allocation goals. While each of these alternatives may be successful at achieving one or a few of the allocation goals, they generally fail to be successful at meeting at least one or more of the goals.

In the BMWC, the managers' group is currently in the process of selecting an alternative for implementation based on the results of this evaluation. Following their adoption of an approach, recreation use allocation decisions will be made and implemented. In other allocation situations, the process described here of defining goals and specifically evaluating the ability

of the alternatives to achieve goals should prove useful in assisting managers with assessing possible approaches to decision making. While allocation goals in other wilderness and wildland areas may vary according to local circumstances, the alternatives and goals provided here establish a starting point for further modification, development, and application. The alternative allocation approaches evaluated offer a wide variety of options; however, many of these methods are not fully developed procedures, and therefore offer only general guidance for approaching the allocation issue—potentially with unsatisfactory results. While this study has provided a process for selection of a preferred alternative from those available, a well-developed, theoretically grounded method for the allocation of recreation use in wilderness is clearly lacking. Only with additional research and further development of approaches for resolving challenging allocation issues will truly satisfactory alternatives be available to wildland managers.

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