

# Monitoring Social Indicators in the Bear Trap Canyon Wilderness 1988–1998

Joe L. Ashor

**Abstract**—Since its inception as a wilderness planning and management tool almost 15 years ago, the Limits of Acceptable Change (LAC) process has stressed the importance of monitoring. Monitoring social conditions is critical to ensure that quality visitor experiences are maintained. Ten years of data collected from monitoring three river corridor-related social indicators in the Bear Trap Canyon Wilderness in Southwestern Montana are analyzed. Results indicate there is very little direct relationship between use levels of floaters and hikers and the ability to meet the LAC social standards. The data also showed that the standards for most of the indicators monitored, are not being met on weekends.

The Bear Trap Canyon was designated wilderness on October 31, 1983 as one of four units of the Lee Metcalf Wilderness. Located in Southwestern Montana, it was the first Bureau of Land Management (BLM) area to enter the National Wilderness Preservation System. It is only 6,000 acres in size, but contains almost nine miles of the Madison River within its borders. In 1984, a management plan was written for the area that directed the BLM to establish environmental and social management standards through the use of the Limits of Acceptable Change (LAC) process. In 1991, LAC management direction was completed, using two resource indicators and four social indicators. Standards were established for each indicator, using a planning team comprised of wilderness users, river outfitters, landowners and BLM wilderness staff personnel. The wilderness was also zoned into three classes, ranging from “class I (most pristine)” to “class III (least pristine).” The river corridor was divided into two separate classes: II and III. The three indicators and standards analyzed in this study included the following:

Indicator	Standard
1. # of encounters per day between float groups and other float groups	80% chance of encountering no more than 3 other float groups
2. # of encounters per day between float groups and groups on shore	80% chance of encountering no more than 1 other shore group (Class II)
3. # of encounters per day between float groups and groups on shore	80% chance of encountering no more than 5 shore groups (class III)

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 Joe L. Ashor, Outdoor Recreation Planner, Bureau of Land Management Grand Junction Field Office, 2815 H Road, Grand Junction, CO 81506 U.S.A., e-mail: Joe\_Ashor@co.blm.gov

## Data Collection

As the literature on the LAC process has pointed out numerous times, monitoring is essential to determining what types of changes in social and biophysical conditions may be emerging over time; and it is critical in determining the effectiveness of management actions in addressing impacts and concerns. Monitoring provides information vital to management because it may suggest needs for revisions in actions or acceptable conditions (McCool and Cole 1997.) Monitoring in the wilderness was conducted by a BLM river ranger and the two commercial river outfitters permitted to operate on the river. Wilderness visitor contact record forms were used in the field to keep track of the number of groups encountered. The number of patrol trips per year varied from 37 to 81 and averaged 63 per year over a 10 year time span, 1989-1998. During this time, both use levels on the river and on the shore were also monitored with a combination of visitor registration stations and electronic traffic counters. Ten years of data were analyzed, with particular attention paid to the relationship between use levels and the condition of the various standards. Other factors that may have had an effect on this relationship were also explored, such as water levels of the Madison and other nearby rivers.

## Findings: The Condition of the LAC Indicators and Standards

Figures 1 and 2 show annual estimated visitor use levels in the Bear Trap Canyon Wilderness between 1988 and 1997. In general, use levels for both floaters and shore users almost doubled during this time period. Figures 3, 4 and 5

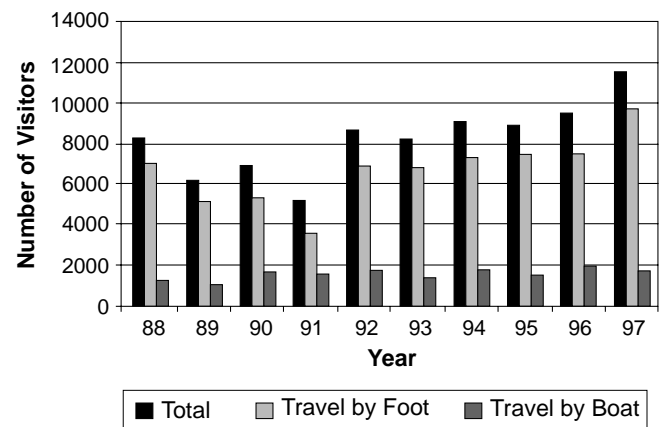


Figure 1—Bear Trap Canyon Wilderness visitor use 1988-1997.

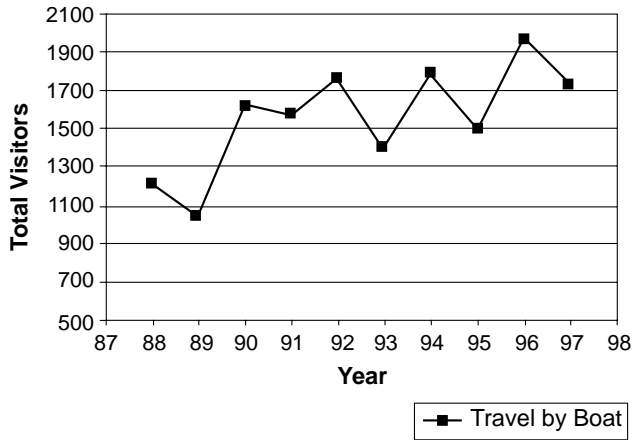


Figure 2—Floater use in Bear Trap Canyon Wilderness 1988-1997.

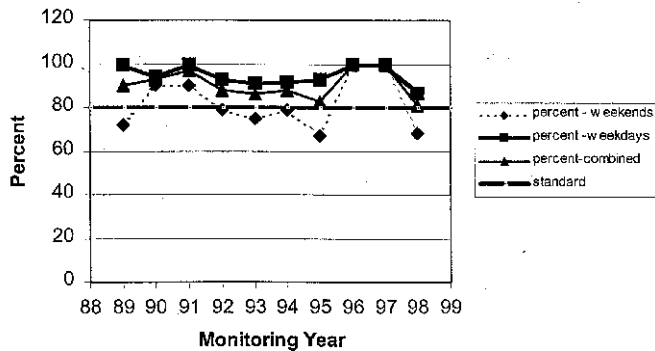


Figure 3—Indicator: Number of other float parties encountered while floating/day. Standard: 80% chance of seeing no more than 3 other float groups.

summarize the condition of three indicators monitored roughly during this same time (1989-1998). The standard is displayed at the 80 percent level. The dark bold line represents the LAC standard itself. Points above the line indicate acceptable social conditions for that particular indicator. Points below the line indicate that for that particular year, the standard was violated at varying degrees below the 80 percent level. For example, in figure 3, for the year 1998, the standard was only met on weekends at the 68 percent level, 12 percentage points below the LAC standard of 80 percent.

For Indicator #1—Number of encounters per day between float groups and other float groups, the following trends were observed (fig. 3). For six out of the 10 years, the standard of “80 percent chance of seeing no more than three other float groups per day,” was not met on weekends. One would assume that during the years when the standard was not met, use levels should have been higher. That is, there should be a direct relationship between use levels and the condition of the standard. What the data show instead is a very weak relationship between floater use levels and the condition of the LAC standard. In years where the data show a large increase in floater levels, such as 1989 to 1990 and

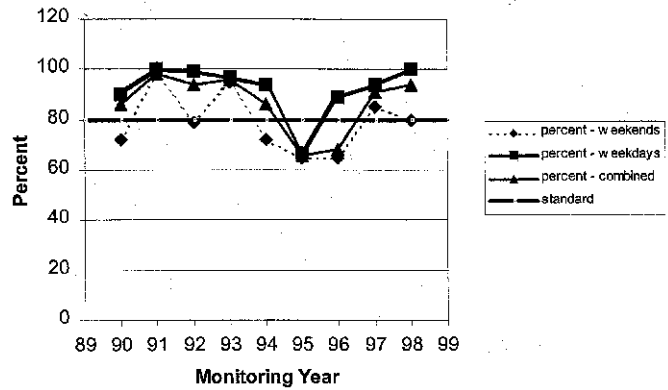


Figure 4—Indicator: Number of shore parties encountered while floating/day. Standard: 80% chance of seeing no more than 1 shore group (Class II).

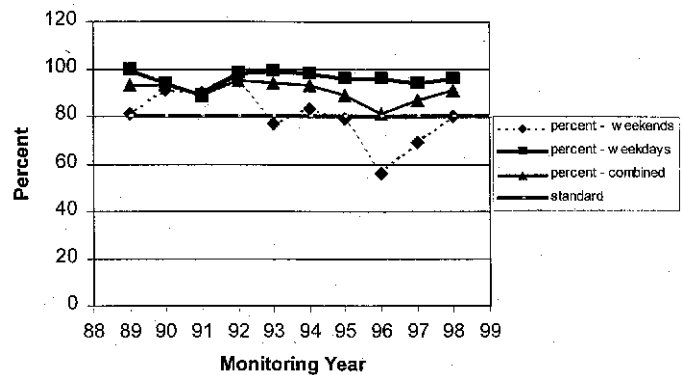


Figure 5—Indicator: Number of shore parties encountered while floating per day. Standard: 80% chance of seeing no more than 5 shore groups per day (Class III).

1995 to 1996, the condition of the standard improved and in fact was met at the 100 percent level for weekends as well as weekdays for two years in a row (1996 and 1997).

For Indicator #2—For number of encounters per day between float groups and groups on shore (class II) the following trends were observed (fig. 4). In five out of the 10 years, the standard was not met on weekends; for one year, 1995, the standard was not met at all for both weekends and weekdays. Unlike indicator #1, the data show that there is more of a direct relationship between use levels on shore and the condition of the LAC standard. For example, between 1991 and 1992, the number of shore visitors almost doubled. The condition of the LAC standard showed a commensurate downward trend.

For Indicator #3—For number of encounters per day between float groups and groups on shore (class III), the following trends were observed (fig. 5). In four out of the 10 years, the standard was not met on weekends. The relationship between use levels and the condition of the LAC standard was also very similar to indicator #1. That is, even when use levels almost doubled between the years 1991 and 1992, the condition of the LAC standard still improved.

## Observations of Influencing Factors

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Based on the above data, the following observations were made. The relationship between use levels and the ability to meet the LAC standard is very complex and affected by a multitude of factors most of which are beyond the control of managers. Keeping in mind the fact that no new management actions were employed during the time period of the monitoring, what influencing factors might be involved in affecting whether or not the above three standards are maintained within the limit of acceptable change?

One factor has to do with the annual fluctuations in levels of both the Madison and other nearby rivers. When there is a low water year on other nearby rivers, making them unfloatable, floaters can still use the Bear Trap Canyon because of regulated minimum-flow standards. This tends to increase the crowding on the river in the Bear Trap Canyon. Discussions with both the two river outfitters and the BLM river ranger shed some light on why the conditions of the LAC standards improve even in years where crowding on weekends is a problem. The two river outfitters, who are aware of the LAC standards, are taking more weekday trips to avoid the crowding on the weekends and are also spreading their trips out over a longer season.

Changing overall use patterns also seems to be a contributing factor. More private boating parties are launching during the early evening hours, thereby avoiding encounters with other daytime float groups and shore groups.

## Management Implications

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What the data suggest is that when crowding on the weekends becomes a problem, wilderness visitors may alter what time they make use of the wilderness in order to maintain a quality experience for themselves or, in the case of the outfitters, their clients. The data also suggest that factors other than direct implementation of management actions by the BLM led to improved social conditions in the wilderness. Fluctuating annual water flows, changing user behavior, changing use patterns and other unknown factors all influenced whether the condition of the LAC indicators was maintained within standards.

This is not to suggest that managers should leave the quality of the social environment in the wilderness up to the visitors themselves. What was clearly lacking in this case was a response by managers to implement agreed-upon management actions to maintain the condition of all

indicators within LAC standards. In general, indicators and standards are meant to be used as early warning devices to alert managers to unacceptable social and biophysical conditions in the wilderness. At the same time, standards are absolute limits - not just warnings. Violation of standards should not be tolerated (Cole and Stankey 1997). Managers have a responsibility, when the monitoring data show a clear downward trend, to implement management actions that will ensure that conditions remain better than the standards.

## Conclusions

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Ten years of monitoring social indicators in the Bear Trap Canyon Wilderness has revealed some unexpected relationships and trends. In general, the relationship between use levels and the ability to maintain standards within acceptable conditions is very complex and influenced by a variety of factors. One cannot assume that just because use levels significantly rise during a particular year, the condition of the LAC indicator will always decline. The data have clearly shown this is not always the case. Having a better understanding of the factors that influence the condition of a particular indicator would help managers determine the best course of action to take to assure standards are not violated.

A better protocol for monitoring indicators and standards in the Bear Trap Canyon Wilderness is also needed. Minimal procedures were initially established when the Bear Trap Canyon Wilderness LAC plan was completed almost nine years ago. There is a clear need to develop more effective monitoring procedures to help improve the accuracy and precision of the data.

## References

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- Cole, David N.; Stankey, George H. 1997. Historical Development of Limits of Acceptable Change: Conceptual Clarifications and Possible Extensions. In: Proceedings-Limits of Acceptable Change and related planning processes: progress and future directions; 1997 May 20-22; Missoula, MT. Gen. Tech. Rep. INT-GTR-371. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station; pg. 5.
- McCool, Stephen F.; Cole, David N. 1997. Experiencing Limits of Acceptable Change: Some Thoughts After a Decade of Implementation. In: Proceedings-Limits of Acceptable Change and related planning processes: progress and future directions; 1997 May 20-22; Missoula, MT. Gen. Tech. Rep. INT-GTR-371. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station; pg. 72.