

A Quarter Century of Change on Campsites in Three Drainages:

Montana Portion of the Selway-Bitterroot Wilderness

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The Study

Beginning in the mid-1970s, a study of campsite impacts was begun in the Montana portion of the Selway-Bitterroot Wilderness. Three drainages varying in use intensity were selected for study. Big Creek was selected as a high-use drainage. Bear Creek was considered to be moderate-use drainage and Sweeney Creek was considered a low-use drainage. In each drainage, the most likely places for camping were searched and all campsites in these areas were located. In the early years, campsite monitoring consisted entirely of photography. Campsite overview photos and panoramic photos were taken at each site. In addition, vertical photographs of the groundcover were taken at three intervals along four transects radiating from a center point.

To compare photographic data with quantitative data collected in later years, David Cole analyzed the three types of photography and assigned each campsite a modified Frissell (1978) condition class rating between 1 and 4. While there may be some error in this translation, errors should be minimal given the coarseness of the condition class system and the ease of observing groundcover conditions on the photographs. Modified condition class ratings are as follows:

1. Minimal physical change except for possibly a simple rock fireplace. Ground vegetation may be flattened but not permanently injured.
2. Ground vegetation worn away around fireplace or center of activity.
3. Ground vegetation lost on most of the site, but humus and litter still present in all but a few areas.
4. Bare mineral soil widespread on the site.

On campsites where conditions reflected the definitions of two adjacent classes, the campsite was assigned a mid-point rating (e.g. 2.5). Although monitoring was conducted several times in the mid-1970s, data from the year 1977 were selected as the baseline data.

In 1989, we repeated campsite inventories in each of these three drainages. We reexamined each campsite located in 1977 and assigned it a condition class rating. Campsites that had recovered to where they were virtually not evident were considered to have disappeared. We located and monitored new campsites. In addition, we completed a rapid multiple parameter monitoring form (the Bob Marshall Cole method-Cole 1989) at each campsite with a condition class greater than 1.0. Unfortunately, the forms for sites in Sweeney and Big Creek have been lost. In 2001 (Sweeney Creek) and 2002 (Big Creek and Bear Creek), we repeated this process. We visited the places in each drainage that we thought people were likely to camp and collected monitoring information on all the campsites we found. We gave each site a condition class rating and completed a rapid multiple parameter monitoring form at each campsite with a condition class greater than 1.0. I would estimate that at each measurement period we found more than 90% of the campsites and virtually all of the sites with pronounced impacts. There were a few places in each drainage we did not visit that might contain campsites. These are noted under each drainage.

Results

Each drainage will be discussed separately below. In addition, the appendix contains maps of the condition class of each campsite at each monitoring year, as well as a map of changes for each drainage. The appendix also contains maps that show the number of each campsite, as well as condition class ratings for each campsite at each monitoring year.

Sweeney Creek

Of the three drainages, Sweeney Creek was the most infrequently used in the 1970s and was substantially less impacted than the other drainages. In 1977, there were only seven campsites in this drainage (Table 1). The three sites with pronounced impacts (classes 3 and 4) were at Duffy Lake, Peterson Lake, and the spring 3 km from the trailhead. By 1989, the number of campsites had increased to 17 and there were five sites with pronounced impact. The number of sites at each lake increased, from two to six at Peterson Lake, from three to seven at Duffy Lake, and from one to three at Holloway Lake. By 2001, the number of campsites had increased to 35 and there were nine sites with pronounced impact. Peterson Lake had the most campsites (14) and the most sites with pronounced impact (7). There was also an extensive web of social trails between sites at the inlet to the lake, which did not exist before. Duffy Lake had 13 campsites, of which only one site had pronounced impacts. A web of social trails exists, much of which has been there for some time. Holloway Lake had six lightly impacted campsites.

Condition Class	1977	1989	2001
1	2	9	20
2	2	3	6
3	1	1	5
4	2	4	4
Total	7	17	35

Table 1. Changes in the number and condition of campsites in the Sweeney Creek drainage.

Bear Creek

The moderate-use Bear Creek drainage had many more campsites in 1977 than Sweeney Creek. We found 19 campsites in 1977. Nine sites had pronounced impacts (class 3 or 4). The area of most pronounced impact was close to the outlet of Bryan Lake, where there were two class 4 sites and extensive related stock-tying damage. However, we did not search further uptrail from Bryan Lake nor did we hike up the South Fork beyond the site that was 11 km from the trailhead. We also found two sites at Bear Lake (class 1 and 3) but these are excluded from the table because Bear Lake was not revisited in 2002. Finally, there is a very large camp a few km below Bryan Lake that was never inventoried. The total impact on this one site represents a substantial proportion (perhaps one-third) of the campsite impact in the entire drainage.

By 1989, the number of campsites had increased to 35, although there was no increase in the number of sites with pronounced impact. Most of the new campsites appeared at Bryan Lake and along an attractive stretch of the creek just a few km from the trailhead. By 2002, the number of campsites in the portion of the drainage that we visited was 26. This is 36% more than in 1977 but 26% less than in 1989. The number of campsites with pronounced impact had decreased to 5.

Condition Class	1977	1989	2002
1	3	14	17
2	7	13	4
3	6	7	4
4	1	1	1
Total	19	35	26

Table 2. Changes in the number and condition of campsites in the Bear Creek drainage.

Big Creek

The most heavily-used drainage, Big Creek, had 42 campsites in 1977, more than the Sweeney and Bear Creek drainages combined (Table 3). Many of these campsites were substantially impacted. There were sixteen class 3 sites and seven class 4 sites. One-half of the campsites and 56% of the sites with pronounced impact were at Big Creek Lake. In 1989, the number of campsites had increased to 54, while the number of sites with pronounced impact (26) was fairly stable. By 2002, the total number of campsites was 47. This is 12% more than in 1977 but 3 % less than in 1989. The number of campsites with pronounced impact had decreased to 19. This is 17% more than in 1977 but 17% less than in 1989.

Condition Class	1977	1989	2002
1	5	11	11
2	14	17	17
3	16	19	10
4	7	7	9
Total	42	54	47

Table 3. Changes in the number and condition of campsites in the Big Creek drainage.

Discussion

Collectively across these drainages, campsite impacts increased dramatically between 1977 and 1989, but have been relatively stable since 1989. Changes in impact reflect changes in the number of campsites more than they reflect changes in the intensity at which individual campsites are impacted. The total number of campsites increased from 68 in 1977 to 106 in 1989 to 108 in 2001/2002. The number of campsites with pronounced impacts (class 3 and 4) was 33 in 1977, 39 in 1989 and 33 in 2001/2002. However, trends vary substantially both among and

within drainages. There is an inverse relationship between impact in 1977 and the amount of resource degradation that occurred between 1977 and 2002. Conditions in Sweeney Creek, the most lightly used and impacted drainage in 1977, have deteriorated substantially. Conditions in Bear Creek deteriorated between 1977 and 1989 but have been improving since then. Conditions have been relatively stable at Big Creek. This suggests that conditions are becoming more homogeneous over time. It appears that over time, new campsites continue to be developed to the point where eventually either all desirable places to camp have been developed into a campsite or the density of campsites is so great that there is little incentive to create a new campsite. This stage was reached at Big Creek Lake and throughout much of the Big Creek drainage before 1977. This stage may have been reached in Bear Creek by the end of the 1980s. It may not yet have been reached in Sweeney Creek.

There is also variability within drainages. One clear trend is the proliferation of new campsites at the more remote lakes (Holloway, Pearl and South Fork Lakes). While few of these sites are heavily impacted, the total number of campsites at these lakes increased from 4 in 1977 to 11 in 2002. Campsites also proliferated close to the trailheads, in the first few km of trail. The location that deteriorated most over the quarter century was Peterson Lake.

The fact that trends varied substantially within and between drainages illustrates the importance of monitoring conditions everywhere. The fact that proliferation of sites is more problematic than deterioration of established sites illustrates the importance of doing a census of all sites rather than just monitoring a sample of established campsites. Finally, the finding that proliferation was particularly pronounced at remote attractions points out the need to focus management attention on remote places as well as popular wilderness destinations.

References

- Cole, David N. 1989. Wilderness campsite monitoring methods: a sourcebook. General Technical Report INT-259. U.S. Department of Agriculture, Forest Service, Intermountain Research Station, Ogden, Utah, 57 pp.
- Cole, David N. 1993. Campsites in three western wildernesses: proliferation and changes in condition over 12 to 16 years. Research Paper. INT-463. U.S. Department of Agriculture, Forest Service, Intermountain Research Station, Ogden, Utah, 15 pp.
- Frissell, Sidney S. 1978. Judging recreation impacts on wilderness campsites. *Journal of Forestry* 76: 481-483.

Appendices

1. Maps showing condition class ratings of campsites in 1977, 1989 and 2001/2002.
2. Maps showing change in the number and condition of campsites: 1977-2001/2002.
3. Maps providing the campsite number assigned to each campsite.
4. Spreadsheet showing condition class ratings for each numbered campsite.
5. Maps illustrating the proliferation of campsites and social trails at the inlet to Peterson Lake, 1977-2001.

Condition Class of Campsites in Sweeney Creek

<u>Campsite Number</u>	<u>1975</u>	<u>1989</u>	<u>2001</u>
1	4.0	4.0	4.0
2	3.0	4.0	4.0
3	2.0	2.0	2.5
4	4.0	4.0	4.0
5	2.0	2.0	2.0
6	1.5	1.5	1.5
7	1.5	1.5	1.5
8		4.0	4.0
9		3.0	3.0
10		1.0	1.0
11		1.0	1.0
12		1.0	1.0
13		2.0	1.0
14		1.0	1.5
15		1.0	2.0
16			1.0
18			1.0
19			2.0
20			1.0
21			3.0
22			3.0
23			1.0
24			3.0
25			3.0
26			1.5
27			1.0
28		1.0	1.0
29		1.0	1.0
30			1.5
31			1.0
32			2.5
33			1.0
34			1.0
35			1.0

Condition Class of Campsites in Big Creek

<u>Campsite Number</u>	<u>1975</u>	<u>1989</u>	<u>2002</u>
18		2.5	0.0
2A	3.0	3.0	4.0
28	2.0	3.0	2.0
3	4.0	4.0	4.0
4	2.0	0.0	0.0
5	3.0	3.5	2.0
6A	4.0	4.0	4.0
68	3.0	3.5	4.0
6C	3.0	3.5	0.0
6D	2.0	3.0	1.0
7	3.0	3.0	3.5
8A	4.0	4.0	4.0
88	2.0	2.5	4.0
8C	2.0	0.0	0.0
9	4.0	4.0	4.0
26P	2.0	1.5	2.0
26A	3.5	3.5	3.0
268	2.0	2.0	1.5
27A	3.0	3.0	3.0
278	3.0	2.5	2.0
27C	1.0	0.0	0.0
25	3.0	3.5	3.0
46		1.0	2.0
46A		1.0	0.0
45			1.0
10	2.0	1.0	0.0
11	3.0	3.0	3.5
12	2.0	2.0	2.0
13	1.5	2.0	1.5
14	2.0	2.0	1.5
15	2.0	2.0	2.0
16	2.0	2.5	0.0
17	4.0	4.0	4.0
18	4.0	4.0	4.0
19	3.0	3.0	2.5
20	3.0	3.0	2.5
21	1.5	0.0	0.0
22	3.0	3.0	3.0
23	2.0	1.0	0.0
24	4.0	3.5	3.0
39	3.0	4.0	3.0
31	3.0	3.0	2.0
30	1.0	0.0	0.0
30A			1.5
29	3.0	2.5	3.0
32	2.0	2.5	2.0
28	1.0	1.5	1.0
33		1.0	1.0
35A		1.0	0.0
34		1.0	3.0

35	2.0	2.0
11A	2.0	0.0
36	1.0	2.5
37	0.0	2.5
22A	1.0	0.0
38	3.5	1.0
40	0.0	2.0
41	3.0	3.5
42	3.0	2.0
43	2.0	1.5
44	2.0	1.0
37A	1.0	0.0
43A	2.5	0.0

Condition Class of Campsites in Bear Creek

Campsite Number	1975	1989	2002
1	3.0	2.0	0.0
2A	2.0	2.0	2.0
2B	2.0	2.0	2.0
3	3.0	3.0	3.0
4	2.0	2.0	1.5
5	1.0	1.0	0.0
6	3.0	3.0	1.5
20	3.0	3.0	1.5
7	2.0	2.0	1.0
8	2.0	3.0	0.0
9	3.0	2.0	1.5
10	2.0	2.0	0.0
17	2.0	2.0	2.5
11	4.0	2.0	1.5
14	3.0	2.0	1.5
12	4.0	4.0	4.0
13	4.0	3.0	3.0
18	1.0	1.0	0.0
19	1.0	1.0	0.0
15	1.0	0.0	?
16	3.0	3.0	?
29		1.0	1.0
30		1.0	1.0
31		1.0	0.0
32		1.0	0.0
37			1.0
39			1.0
41			1.0
33		1.0	0.0
28		1.0	1.5
34		2.0	0.0
21		1.0	1.0
22		1.0	1.0
23		2.0	1.0
24		2.0	2.0
25		1.0	0.0
26		1.0	0.0
27		3.0	3.0
35		1.0	1.5
36		1.0	?
38	3.0	3.0	3.5

Couldn't get to Bear Lake in 2002--sites 15, 16 and 36.

There's a huge camp that has never been inventoried several km below Bryan Lake
 We never got upstream from Bryan Lake or from camp 9 on the South Fork