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Wilderness Campsite Selection-What Should Users Be Told?

By Dave Cole and Jim Benedict

Recreational use of National Forest wilderness in 1981 exceeded 10 million visitor days (a 12-hour stay by one person) . . . an increase of more than 25 per cent over 1980. Backcountry use in the national parks for the last several years has remained fairly constant at between 2 and 3 million overnight stays per year.

While these measures are not comparable, together they clearly indicate increasing numbers of people crowding into America's wilderness areas, threatening wilderness values and leading some to suggest that we are loving wilderness to death.

The resource damage resulting from this use is particularly pronounced on campsites, where visitors spend most of their time. Managers have responded in a variety of ways, ranging from encouraging adoption of minimum impact camping techniques to strict regulation of both numbers of users and permitted practices.

The only real means of avoiding both resource damage and irksome restrictions is to increase public awareness of the nature and importance of campsite impacts and the means for minimizing damage. Recognition is the first step. Most visitors don't even notice wilderness campsite damage, let alone recognize its undesirability.

Initial impacts on a campsite include trampling of vegetation, movement and blackening of rocks used to build firerings, removal of firewood from the vicinity, deposition of charcoal and ash in the firering, and addition of nutrients from human wastes and other pollutants. Use of horses intensifies these impacts.

On substantially impacted sites, vegetation disappears from large portions of the campsite and the kinds of plants that survive are very different from those that grow under undisturbed conditions. Trampling compacts soil, restricts movement of air and water and the growth of plant roots. Thus, less moisture can percolate into the soil, surface runoff increases, and the soil erodes. The organic horizons of soil (decomposing leaves, needles, cones, twigs, duff, humus) disintegrate and erode, exposing bare mineral soil.

On the most heavily damaged campsites, such impacts reach alarming levels. In the Eagle Cap Wilderness in northeastern Oregon, we found over 90 percent of the tree seedlings and a similar percentage of the ground vegetation had been destroyed by trampling. More than 95 percent of the overstory trees had been damaged, either from collecting firewood or from malicious or thoughtless acts. Particularly disturbing was the discovery that one-third of the trees had actually been cut down. Most of these sites will remain forested only until the present generation of trees dies.

Soil organic horizons on these campsites were only one-third as thick as normal; bare mineral soil was 30 times that of undisturbed sites. Compaction and erosion of soil were prominent; roots had been exposed on over one-third of the trees. Size of the campsites was large; some sites were coalescing to form huge disturbed areas.

Campsites can deteriorate to this point very rapidly. Dr. Lawrence Merriam and associates at the University of Minnesota found on newly opened campsites in the Boundary Waters Canoe Area that most site deterioration occurred in the first few years. Once pronounced deterioration occurs, recovery takes a very long time. Estimated recovery periods for disturbed alpine sites in Rocky Mountain NP are as high as 1000 years! This is why it is so important either to avoid campsite impacts entirely, or to be very selective about where they occur.

Frequency of use is only a partial explanation for why some campsites are more seriously damaged than others. Many frequently used sites are in better condition than sites used less often. A night or two of use every year is often sufficient to do considerable damage. In subalpine forests in both Oregon and Montana, additional use of sites already being used about 10 nights per year is unlikely, by itself, to lead to further deterioration.

This suggests that the most useful options for minimizing campsite damage are either never to allow sites to be visibly impacted by spreading people so widely that no site is used more than one or two nights per year, or to convince people they should camp over and over again on the same small number of sites — recognizing that these sites will be significantly impacted, but confining impact to a very small part of the wilderness. A moderate number of lightly impacted sites actually is not a realistic option, because such sites are vulnerable to extremely rapid deterioration with only minor increases in use.

The condition of campsites is more a result of the characteristics and camping practices of users and of local site conditions than of amount of use. Large parties and parties with packstock do the most damage and special efforts should be made to encourage them to select sites that already have been substantially

altered and are large enough to accommodate their party size.

Most wilderness visitors travel on foot and in small groups. About 90 percent of wilderness users are hikers; parties of less than five persons are two to three times as common as parties of five or more. For this vast majority of users, campsite damage can be reduced by following minimum impact camping procedures.

1. Go without a campfire. This eliminates the need to scour the area for firewood and leaves behind no charcoal, ash, and blackened rocks.

2. If you must have a fire, try to select a site with an existing firering. If no ring exists, choose a fire site with no vegetation cover and, if possible, no humus or litter. Dig a shallow pit, away from stones that might be blackened. Burn only dead and down wood that you can break by hand. Larger pieces do not burn readily to ash. They are critical as habitat for many plant and animal species and in maintaining the water relations and nutrient balance of the campsite. When through, burn all wood to ash, make sure the fire is out, fill in the pit, and camouflage the disturbance with appropriate materials.

3. Minimize site pollution by packing out all garbage and by using only biodegradable soaps, in small quantities and away from water sources.

4. Never flatten a site, trench a tent, or build rock walls as windbreaks. Engineering is not appropriate in wilderness and should not be necessary if sites are carefully selected.

5. Leave the campsite at least as clean and attractive as you found it. In established sites, pay particular attention to the campfire area. Remember you want to encourage others to use your site rather than damage a new area. In pristine areas, try to leave no trace at all of your visit. Try to make it unlikely that the site will be used again until the effects of your stay have been cancelled out.

When using pristine sites it is critical to allow yourself sufficient time and energy at the end of the day to find an impact resistant site. Take an early break — stash your packs — explore a little. Ecosystems are extremely complex and our knowledge of site resistance and fragility needs to be greatly improved, but most wilderness hikers are knowledgeable enough to make good choices if they stop in time to survey their options and use their best judgment.

A general rule for site selection that applies anywhere is to obey existing regulations about where NOT to camp. Usually this involves a reasonable distance from water, trails, and other camps. It is meant not so much to keep you off fragile sites as to keep you from invading the solitude of other groups.

In developing the accompanying table and figures, we have slightly modified the campsite rating system developed by Dr. Sidney Frissell at the University of Montana. The table describes six campsite conditions and recommends appropriate user responses. Some responses require an evaluation of how much use the area receives and how proficient your party is

Table: Campsite Condition and Recommended User Responses

CONDITION CLASS	VISIBLE INDICATORS	RECOMMENDED USER RESPONSES
1. PRISTINE	The site appears never to have been used before.	USE WITH CAUTION IN CERTAIN SITUATIONS The keys to proper use of these sites are minimum impact, selection of resistant sites away from attractions, and *no* repeat use. These are ideal sites in lightly used areas *if* you are careful to minimize impacts. In high use areas, it is preferable to select a moderately impacted site unless your party is small, has no packstock, uses a stove, is highly experienced in low impact camping, and chooses a resistant site away from more popular locations.
2. SEMI-PRISTINE	Sites are barely recognizable as campsites. Vegetation has been flattened, but bare areas have not been created.	DO NOT USE These sites will rapidly deteriorate if used repeatedly. In low use areas select a pristine site; in high use areas, select a moderately impacted site.
3. LIGHTLY IMPACTED	Ground vegetation worn away around the fireplace or center of activity.	USE ONLY IF NECESSARY Unless these sites are particularly resistant (e.g., sandy beaches, rocky outcrops, dry meadows, or grasslands), they will deteriorate rapidly if use increases. Moderately impacted sites are always preferable and in low use areas, pristine sites are preferable.
4. MODERATELY IMPACTED	Ground vegetation worn away on most of the site, but humus, litter decomposing leaves and needles are usually present on much of the site.	USE WHERE POSSIBLE These sites are not highly susceptible to further damage. They retain most of their desirable attributes and site impact is not irreversible. If possible, choose screened, forested sites, out of sight and sound of other parties. Do not damage overstory trees. For campfires, collect only dead and down wood that you can break by hand. Avoid trampling seedlings.
5. HIGHLY IMPACTED	Ground vegetation, humus and litter has been worn away on most of the site exposing gritty, dusty, or muddy bare mineral soil. Tree roots may be exposed if stock have been tied to trees but soil erosion is not obvious. Firewood is usually scarce in the vicinity of the campsite. Some overlapping of campsites may occur.	USE ONLY IF NECESSARY Where possible, these sites should be avoided to encourage site recovery. In low use areas these sites should never be used. Managers should be encouraged to close and rehabilitate them. In high use areas, this level of deterioration may have to be accepted as the norm. However, select moderately impacted sites if they exist. When using these sites, avoid spreading out or any other practice that might contribute to site enlargement. Minimize the use of wood fires.
6. SEVERELY IMPACTED	Soil erosion is obvious. Exposure of tree roots and rocks is pronounced and widespread. Trees may be reduced in vigor or dead. Individual campsites may coalesce to create large disturbed areas with multiple fire rings. Firewood is scarce for a considerable distance around the campsite.	DO NOT USE Unless managing agencies require the use of such sites, they should never be used. Damage is already almost irreversible. Managers should be encouraged to permanently close these sites to use.

at minimum impact camping.

The table and figures could be used by managers as camper handouts..

The basic rationale behind all the suggestions is to direct use either to pristine sites or to moderatly impacted sites that are unlikely to deteriorate further. Semi-pristine and lightly impacted sites should be avoided. They deteriorate rapidly with use, and left unused, usually recover fairly quickly. Severely and highly impacted sites should be avoided because they are either poorly located or have suffered as a result of poor camping practices. If possible, they should be closed permanently and allowed to recover.

Pristine sites, with few exceptions, should be used only in light use areas with a large number of potential campsites. This is where selecting resistant sites is important and leaving no trace of your visit is essential. Camping on moderately impacted sites is appropriate everywhere. Such sites should not deteriorate dramatically if properly used. Avoid unnecessary damage, keep these sites clean and attractive and they will continue to offer desirable camping opportunities for generations to come.

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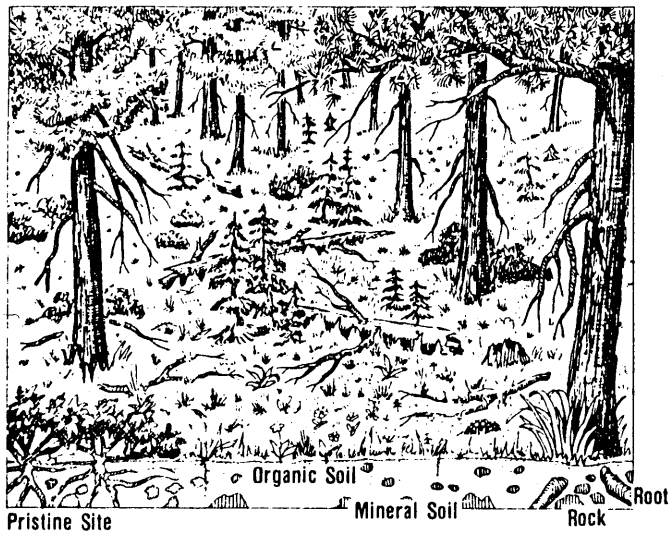
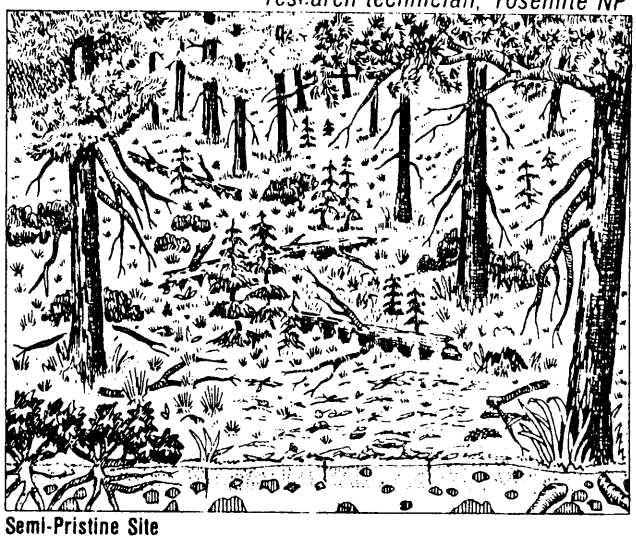
Drawings by Walter Sydoriak, research technician, Yosemite NP



Pristine Site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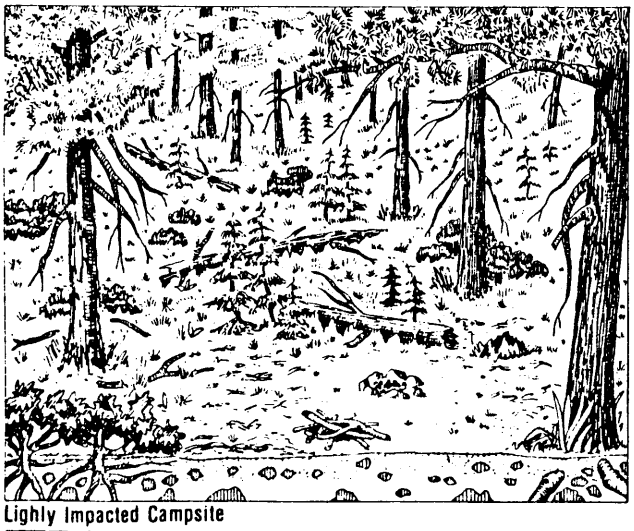
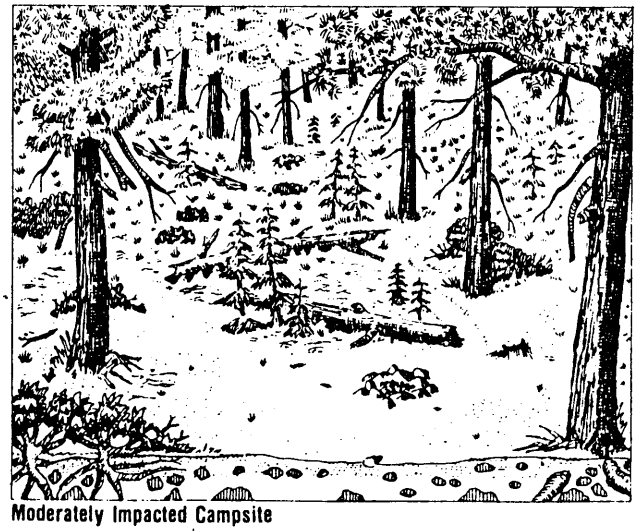

Lighly Impacted Campsite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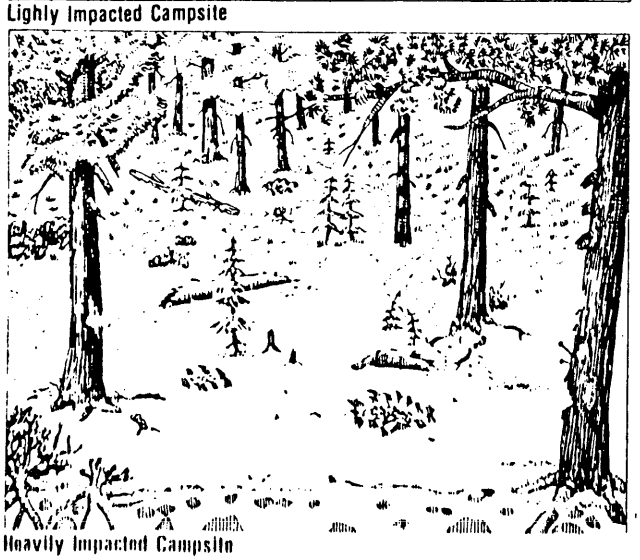
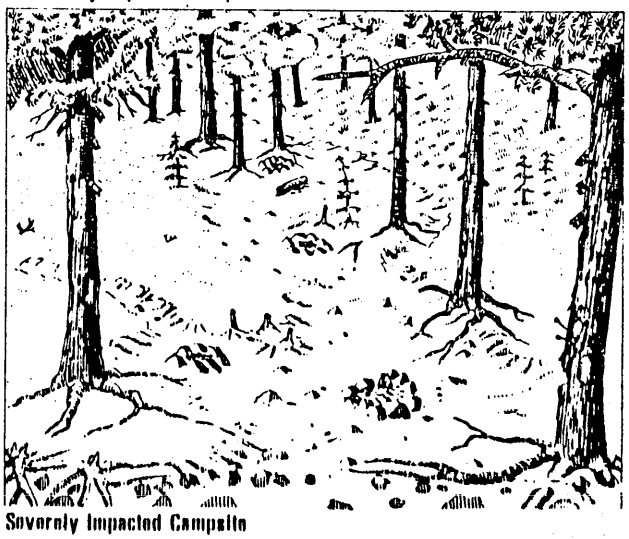

Heavily Impacted Campsite


Severely Impacted Campsite