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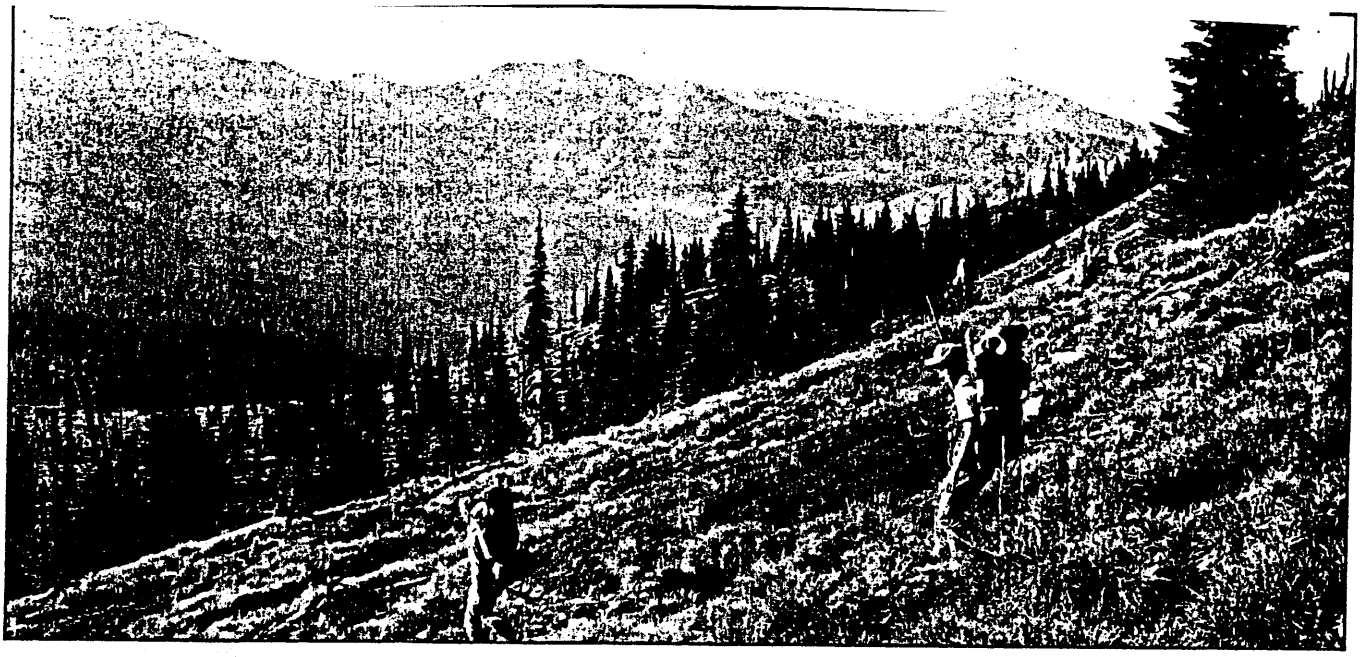

Photo/Bill Cunningham

Seven Principles Of Low-Impact Wilderness Recreation

David N. Cole
Edwin E. Krumpe

What images come to mind when people think about wilderness? Most probably choose to think of snow-capped mountain peaks and clear blue lakes or of dense virgin forests and flower-festooned meadow. This is the idealized view.

A realistic appraisal of wilderness would include some less compelling images — trails eroded waist-deep to bedrock; eight parallel trails cut into the turf of an alpine meadow; mud so deep on the trail that hikers must jump from one side to the other until, muddy to their calves, they give up; campsites that look like feedlots, with no vegetation and soils as compacted as pavement; trees cut down and carved up; piles of litter in messy fire rings; and piles of human waste and toilet paper. Unfortunately, these images are now commonplace on wilderness lands.

Why has this happened? People have been using wilderness for hundreds of years. Early users were primarily concerned about survival. Their frontier style of use often left substantial impacts, but their small numbers meant that relatively small amounts of land were affected.

Over the past half century, however, wilderness use has increased dramatically. Current use levels are more than 20 times higher than they were 50 years ago (Lucas 1989). If camping styles had evolved as quickly as use increased, today's problems might not be so serious. But this was not the case. The challenge facing today's wilderness visitors is to adopt a new low-impact style of wilderness use, a style compatible with the number of people that now visit wilderness.

Knowledge about low-impact techniques has developed slowly over the past few decades. The agencies that manage wilderness have produced scores of brochures with detailed descriptions of hundreds of low-impact techniques. There is even a book for people interested in information on low-impact practices for different environments (Hampton and Cole 1988).

Despite all of this detail, however, the key aspects of low-impact use come down to seven simple principles:

- In popular places, concentrate use and impact.
- In pristine places, disperse use and impact.
- Stay off places that are lightly impacted or just beginning to show effects.
- Minimize noise and visual intrusion.

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- Pack out everything brought into the wilderness.
- Properly dispose of anything that can't be packed out.
- Leave things as they were or in better condition.

Although the last four principles are largely commonsense, the first three are less intuitively obvious. They were derived from extensive research on site impacts and the relationship between impacts and amount of use (Hammitt and Cole 1987, Kuss et al. 1990), which discovered that impacts usually occur very quickly.

Campers can use a site for a few nights without substantial damage, *if* they are careful to minimize impact. If used more often, most sites will deteriorate rapidly, until vegetation is gone and soils are packed down. At this point, additional use will probably have little additional effect.

This suggests that it is best to camp on either pristine sites, with no evidence of previous use, or on sites so highly damaged that further use will cause no additional impact. Lightly affected sites — those that have have been used but still have a substantial amount of vegetation — should always be avoided. These sites will probably deteriorate quickly if used further, while they should recover rapidly if left alone.

It is most appropriate to select a pristine site when visiting remote, little-used places with a group that is prepared to make real efforts to minimize impact. Established campsites that are already damaged should be used when visiting a popular area, traveling in a large group or with pack stock, and when there is little interest in or energy for careful use and cleanup of a campsite. It is always easier to avoid impact in an established camp then on a pristine site.

Campsite impact research provided the fundamental basis for the first three principles, which also apply to use of trails and off-trail travel.

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In popular places, concentrate use and impact. In places where people regularly visit and camp, it is important to pick a campsite that is already heavily used. These sites are relatively stable, and most of the effects that can occur already have. Use patterns on and around established campsites are also important.

The impact of any stay can be minimized if most activities are confined to places that have already been disturbed. This means: 1) selecting a campsite large enough to accommodate the group, 2) setting up tents and the "kitchen" in places that have already been disturbed, and 3) staying on well-worn paths when leaving the site to go for water or to pursue other activities. All of these help avoid enlarging the area of disturbance.

To practice truly low-impact camping, it is best to cook on a stove and avoid building campfires. Today's portable camp stoves are economical, lightweight and convenient. There are stoves designed for backpacking, boating and horsepacking. All assure fast, clean cooking, even where firewood is scarce.

When building a campfire in a popular place, it is important to use an existing fire ring or to build the fire on a site already used for fires. There is no need to scar additional sites. Fires should be built away from trees or boulders that flames can blacken for decades. Rock fire rings are unnecessary; rocks will not keep a fire from spreading, and the rocks will stay blackened for years.

There are three key considerations when selecting wood to burn in fires: 1) It should be dead wood lying on the ground, 2) it should be small enough to break by hand, and 3) it should not be the last available downed wood. Large pieces of wood should be left, because they do not readily burn to ash; as they decay, they are also critical as habitat for many plant and animal species and for maintaining moisture and nutrient balance. Standing dead trees will burn, but they are more valuable for wildlife and aesthetics than as firewood.

Photo/Judy Hutchins

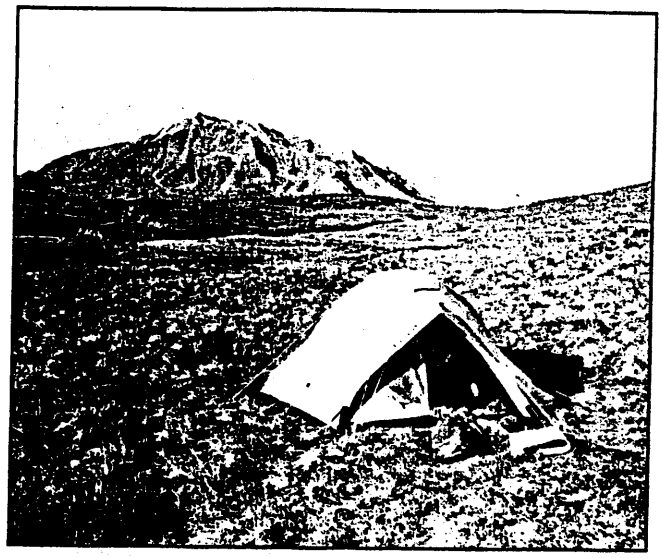
Fires should be allowed to burn only until fine white ash remains. It is important to make sure a fire is out cold by sprinkling the ashes with water and stirring. The final step is to leave a clean and attractive fire site so the next group will want to camp there. If substantial amounts of charcoal have built up in the ring, it may be necessary to remove some of it, spreading it widely in bushes away from camp. This cleanup is easier if a campfire is not lighted on the last morning in camp. The reason for all this care is that each group, in addition to concentrating its own impact on already affected sites, should encourage the next group to do the same.

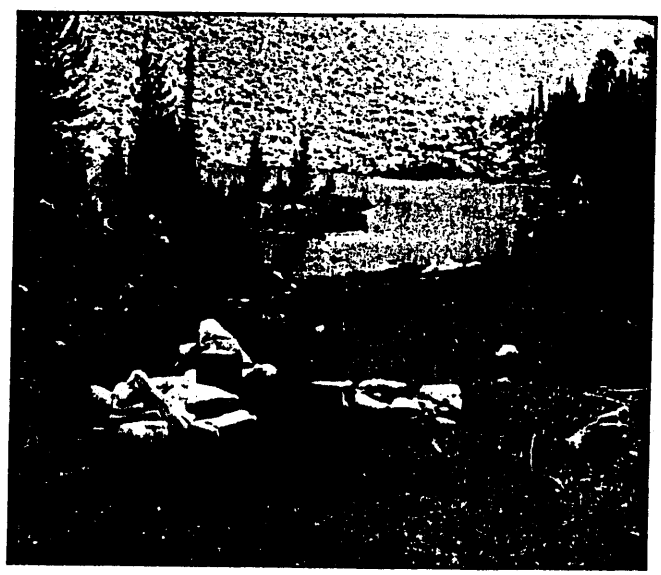
Trails play an important role in wilderness. They provide access for people and stock and are usually designed to accommodate heavy use and restrict soil compaction and vegetation loss to the trail itself. It is therefore important to stay on maintained trails wherever possible. Both hikers and riders should travel single file, down the middle of the main tread, to avoid creating multiple trails. Switchbacks should never be "shortcut," because this causes erosion and trail damage.

In pristine places, disperse use and impact. There are few visible signs of people in relatively pristine parts of wilderness. These places are highly vulnerable to disturbance. The goal for anyone visiting these undisturbed places should be to leave no trace of his or her visit. Evidence of use often attracts other users and starts a cycle of impact that leads inevitably to substantial damage. The key is to make it unlikely that a site used once will be used again until it has completely recovered.

Proper campsite selection is complex in pristine areas and requires time and thought. Campers should leave themselves enough time and energy at the end of a day to find an impact-resistant spot. Camps should be made on a site that is durable and has no evidence of previous use. Durable sites include those without much vegetation — sand and gravel sites are great — and those with vegetation that is resistant to trampling, such as a dry meadow. Since the kitchen area tends to be more heavily used, it should be particularly durable. It is often possible to set tents up in a grassy meadow while setting the stove and main area of concentrated activity on a nearby rock slab. The most fragile sites, which should be avoided if possible, are those with a dense ground cover of either low shrubs or tall herbs.

It is important to disperse tents, activities and traffic routes when using pristine sites, so that no places are intensively disturbed. Trampling impacts can be reduced considerably if people simply watch where they put their feet and wear light shoes in camp. It is best to stay only one night in any place and to camouflage any site disturbance after breaking camp. Particularly important is elimination of evidence of campfires by scattering ashes away from the site and then covering the disturbed place with soil and organic matter. The reason is that each group should leave nothing to encourage the next group





Top: A pristine site with no evidence of previous use; eliminate all signs of stay. ***Middle:*** *a lightly impacted site, where impact is evident, but most of the site is vegetated; do not use.* ***Bottom:*** *a highly impacted site, where vegetation has been removed from most of the site; use in popular places. Photos/David Cole*

to use the same campsite. This is much easier when parties are small, travel without pack stock and avoid building campfires.

When traveling in remote and little-used areas, hikers and riders should use established trails whenever possible. However, many remote places can be reached only by traveling cross-country. When traveling off-trail, it is important to pick a route carefully and to spread out. Even a small group walking single file cross-country can quickly create a new trail, which will inevitably be followed by others. Durable surfaces, such as bare rock, sparsely vegetated forest floors and dry meadows, are preferable to fragile ones, such as wet areas, shorelines, sites with low-growing shrubs like heather and steep slopes. Even light trampling on fragile surfaces shows the impact of feet or hooves.

Stay off places that are lightly impacted or just beginning to show effects. Lightly impacted placed are in a state of flux. If they continue to be used, they usually deteriorate quickly and substantially; if left alone, they usually restore themselves. Therefore, it is important to stay off of these places and allow them to recover. In popular places, it is better to select a more highly impacted campsite. In remote places, a previously unused site should be selected.

The same advice applies to trails. Lightly impacted trails include both abandoned trails and developing trails. Both should be avoided. Abandoned trails do not recover unless virtually all use is curtailed. Repeated use of developing trails creates parallel trails in meadows and a web of social trails at popular destination areas.

Where trails exist, it is best to use the most highly developed of them. Trailless areas remain truly trailless only if people spread out and stay off the incipient trails that develop along the most obvious routes.

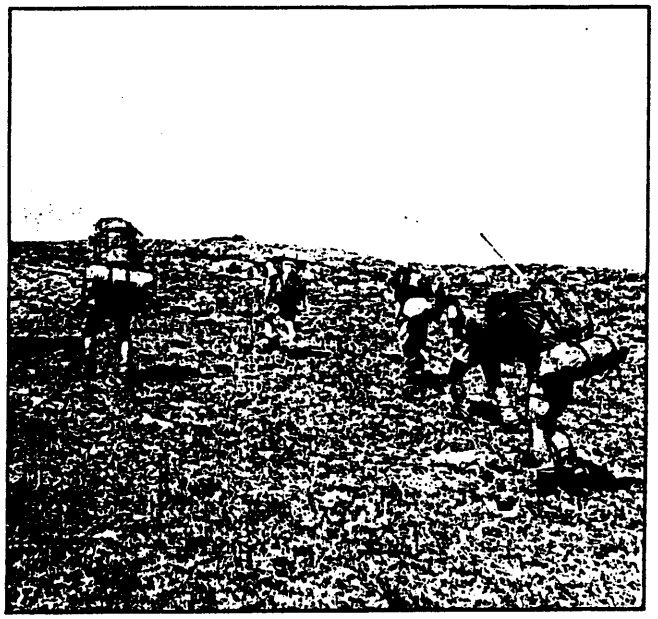
Minimize noise and visual intrusion. In addition to minimizing impacts on the land, it is also important to minimize impact on other people's wilderness experiences. People seek solitude and privacy, particularly where they camp. Solitude can be maximized by doing everything reasonable to stay hidden from other users. Key behaviors include: 1) selecting campsites screened from trails, shorelines and open meadows, 2) avoiding brightly colored clothing, tents and equipment, 3) keeping noise to a minimum, and 4) leaving pets at home or keeping them under control at all times so they don't frighten wildlife and other people.

All of these behaviors are particularly important in popular places, where contact between visitors is a frequent occurrence.

Pack out everything brought into wilderness. Litter is an unwelcome sight. Not only is it a sign of another's passing, but it is also a flagrant announcement of disrespect for both the wilderness and other users.

A well-planned wilderness trip should not accumulate much trash. Repackaging food before a trip can both lighten the pack and eliminate wasteful packaging. Glass and aluminum packaging should be avoided.

Trash should never be buried. Animals dig it up and scatter it, and it may never completely decompose in harsh environments. The burning of trash in campfires should be



Above: When traveling cross-country, a group should spread out. Photo/David Cole
Below: Photo/Bill Cunningham

minimized. Wrapping materials often contain plastics and aluminum, which only partially combust and leave toxic residues. Food scraps are also difficult to burn and are often dug out by animals; burning them requires a hot fire, uses lots of firewood and leaves sloppy fire rings. All of these problems can be avoided by carefully judging food quantities and packing out leftovers with other garbage (except in grizzly bear country). As the slogan says, *Pack it in, pack it out.*

Properly dispose of anything that can't be packed out. No-trace sanitation requires the proper disposal of everything that can't be packed out. In some wild areas like the Colorado River in the Grand Canyon, use is so heavy that everything is packed out; visitors are required to take it all out, including human waste. In all wildlands, the primary sanitation concerns are washing (of dishes and bodies) and disposal of human waste. Water sources can be polluted by soaps, food waste and human waste.

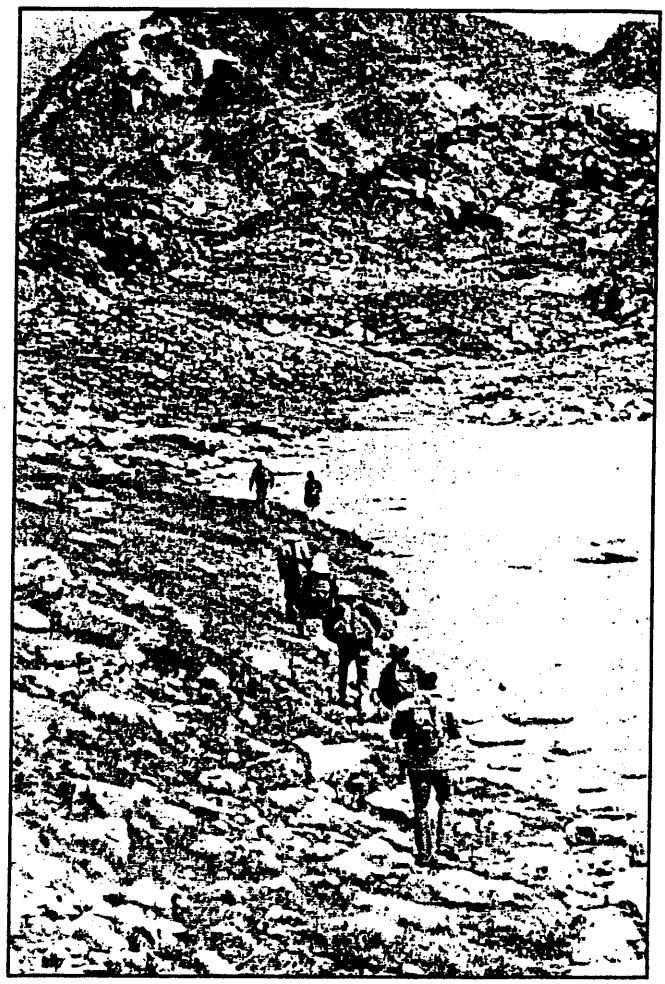
Particular attention is required when disposing of human waste. Although human waste decomposes, harmful pathogens may remain for several years. It is therefore very important to dispose of it far from human activity and water bodies. Waste should be buried in a small hole at least 200 feet from water sources, trails and camps. The appropriate distance from camp increases with the popularity of the area. If there is no fire hazard, toilet paper can be burned. Otherwise, it is best to pack it out or, at least, to bury it in the hole.

All washing should be done away from camp and never directly in streams, lakes or springs. For personal washing, a container can be used for washing and rinsing — away from the water source. Dishes should also be washed away from the water source; small amounts of biodegradable soap can be used, if necessary. Larger food particles should be strained from the dirty water and packed out. Wash water should be dispersed off-site.

Leave things as they were or in better condition. Not disturbing the natural landscape is a key principle that underscores all minimum-impact practices. In wilderness, personal convenience should always be secondary to keeping things natural. This is why it is important never to blaze trees, leave flagging or build rock cairns along trails. That is also why it is never appropriate to make trenches around tent sites, lash together camp furnishing such as tables and shelves, nail up clothes lines, build wind shelters, cut pine-bough beds, construct rock fireplaces or make other "improvements" for convenience.

Such modifications should be dismantled when found, returning the site to a more natural condition. If there are a number of fire rings in an established campsite, visitors can help wilderness rangers by dismantling all but one ring and by leaving that one in a clean and attractive condition. All fire rings and facilities should be dismantled in pristine areas.

Vegetation should not be pulled up for any reason, and trees should not be hacked on or chopped down. Even downed wood should be left in place if it needs to be sawn up or if there is only a little wood left on the ground. People should not collect edible plants, unless only small portions are taken.



Photo/Bill Cunningham

The Wilderness Act says that wilderness shall be administered for the use and enjoyment of the American people, in such manner as will leave it unimpaired for future use and enjoyment *as wilderness.* Ultimately, the condition of the wilderness depends on those who use it. No amount of backcountry patrolling and maintenance can prevent irreparable damage, unless everyone develops a low-impact wilderness ethic.

Wilderness is a sacred trust borrowed from future generations. Yesterday, the wilderness challenge involved overcoming hazards and surviving in the wilderness. Today, the challenge is to do all that can be done to make sure current wilderness use does not violate that trust.

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