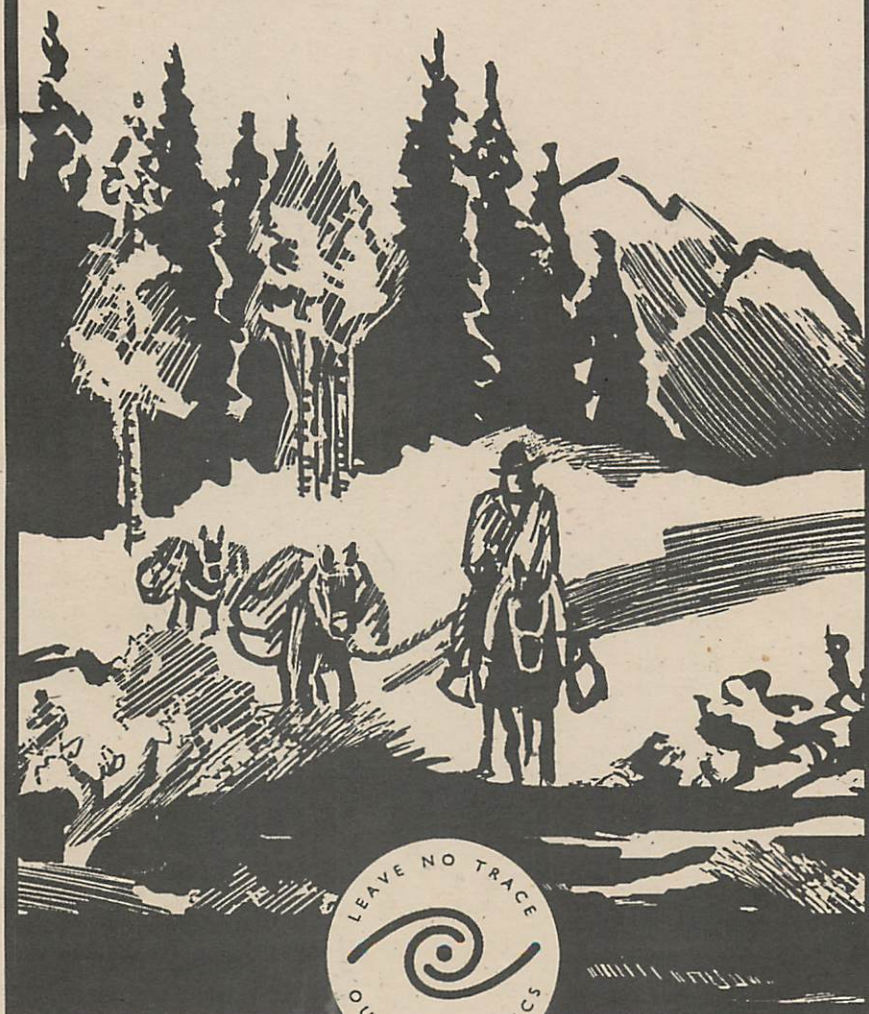


LEAVE NO TRACE

OUTDOOR SKILLS & ETHICS

Backcountry Horse Use



Wildland Ethics

A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.

*Aldo Leopold,
A Sand County Almanac (1949)*

Forester and philosopher Aldo Leopold expressed this sentiment in the 1930s. Today increasing numbers of backcountry visitors are coming to the same realization as they witness their favorite wilderness haunts being loved to death by recreationists seeking adventure and solitude. This booklet is part of a national educational program called Leave No Trace, whose mission is to educate wildland user groups, federal agencies and the public about minimum-impact camping. But the principles and practices discussed here are meaningless as a set of rules and regulations. They must be based on an abiding respect for and appreciation of wild places and their inhabitants. Only then can these principles be tempered with the judgment necessary to apply them in the myriad circumstances in which we find ourselves every time we venture beyond the trailhead.

Simple living, adventure and solitude can still be part of our backcountry travels, but in order to assure their continued existence we must take the responsibility to educate ourselves and to become equipped with skills and habits that enable us to Leave No Trace.



LEAVE NO TRACE

Outdoor Skills & Ethics

developed by the National Outdoor Leadership School

Backcountry Horse Use

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The National Outdoor Leadership School pioneered the teaching and development of practical conservation techniques designed to minimize recreational impact in the backcountry. These techniques, first developed for mountaineers, have now been adjusted for backcountry horse users, with the help of several recognized horsemen and women (see back panel for acknowledgments). The national Leave No Trace education program principles for horse users are:

Principles of Leave No Trace

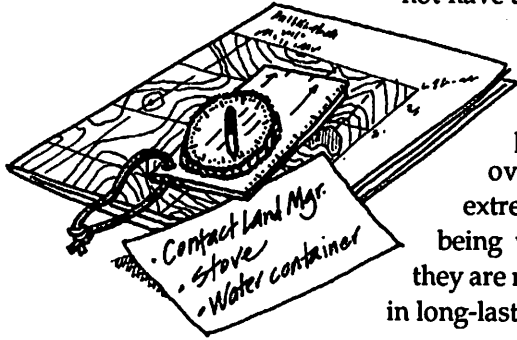
- **Plan Ahead and Prepare Before You Go**
- **Minimize Horse Impact**
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- **Use Campfires Responsibly**
- **Pack It In, Pack It Out**
- **Properly Dispose of What You Cannot Pack Out**
- **Be Considerate of Others**
- **Leave What You Find**

These principles are recommended as a guide to minimizing the impact of your backcountry visits. This booklet discusses factors to consider when traveling with horses in the backcountry, and the rationale behind practices recommended here. Before traveling into the backcountry, we recommend that you check with local officials of the Forest Service, Park Service, Fish and Wildlife Service, Bureau of Land Management or other managing agency for advice and regulations specific to the area. This booklet is intended to support and complement agency guidelines.

Leaving no trace depends more on attitude and awareness than on rules and regulations. Low-impact camping and travel practices must be flexible and tempered by judgment and experience. Consider the variables of each place—soil, vegetation, wildlife, moisture level, the amount and type of use the area receives and the overall effect of prior use; then use these observations to determine which practices apply. Minimize your impact on the land and on other visitors and enjoy your visit as well.

Plan Ahead and Prepare Before You Go

Unnecessary impact in backcountry areas can be avoided by carefully preparing for your trip. For example, if you do not have adequate equipment for grazing re-



straints, you may be forced to put horses on short picket, perhaps even utilizing live trees as the picket anchor. The potential for overgrazing and girdling live trees is extremely high. Impacts resulting from being unprepared may seem minor, but they are not uncommon and over time result in long-lasting damage.

Expectations. Determine the goals and expectations of your trip. Consider your group size, number of horses needed, route length, possible activities, the age and abilities of other group members and their expectations. This will help you choose the best times and places to travel in order to meet your goals.

Knowledge of the area. Many backcountry visitors do not live near the areas they wish to visit. Inquire with local land management personnel for information on such considerations as access, weather conditions, snowpack, available feed, high-use areas and wildlife considerations (such as presence of black or grizzly bears). There may be closures and prohibitions that you should be aware of. You may not be able to camp where you had planned. Some areas are closed to grazing and most areas restrict the number of horses a party can use.

Get out your maps and go over the route. Consider the river crossings, alternate campsites, mountain passes and fishing opportunities. Familiarize yourself with other trails and roadheads that you could use in case of an emergency.

In popular areas you can assume you will be able to find existing highly impacted campsites to use. Conversely, in remote or seldom visited areas, you must be willing to take extra time and use a variety of techniques in order to Leave No Trace of your having camped there. With good information you will be better prepared

for your trip, have a more enjoyable experience and be better prepared to minimize your impacts.

Meal planning and food preparation. Plan your meals carefully. Repackage food into reusable containers or plastic bags. This will reduce the amount of potential trash or litter you bring into the backcountry. Carefully planned rations also reduce waste from leftovers and minimize the amount of extra food carried.

Equipment. Make an equipment list. Select equipment and horse gear that allows you to minimize signs of your stay. Lightweight gear, such as compact stoves and nylon tents and sleeping gear, can help reduce the number of horses required to support your trip, thus reducing impact to trails and meadows. Examine the gear itself. Many amenities can simply be left at home. Taking only what you need will make setting up and breaking down camp go much more quickly. A simple camp makes it easier to Leave No Trace.

The horses. Before entering the backcountry you should consider the following points concerning the horses themselves:

- Take only the minimum number of animals necessary.
- Take only animals which are fit, calm, experienced. For example, a mare in heat or an unbroken colt would be inappropriate.
- Practice at home the techniques to be used in the backcountry before heading out. The roadhead is not an ideal place for an animal to learn about breechings, clinking and clanging pannier loads or windblown mantis.



Accustom your horses to the type of restraints you will be using. Prior experience with backpackers, llamas and other odd-looking wilderness users may save a major wreck and the impact it can cause.

Minimize Horse Impact

Horses and mules have great potential for leaving long-lasting impact in the backcountry. They generate pressures up to 1500 psi on each foot. Horseshoes intensify those pressures and increase shearing force on soils and vegetation. As grazing animals, they compete with wildlife for available feed and can over utilize a meadow if not properly attended. As large animals reacting to fear, boredom, hunger and discomfort they can do damage very quickly. A frightened horse can girdle a tree within seconds if it is improperly tied and then sets back on the lead rope violently.

This section first addresses methods of confining horses while in and near camp, then discusses grazing restraints appropriate once camp is in place.

Confining horses in camp. Ideally, horses should spend the shortest amount of time possible in the camp core; enough to load and unload. Otherwise they should be grazing and held by the least constraining method possible. This allows you to spread out and disperse impact.

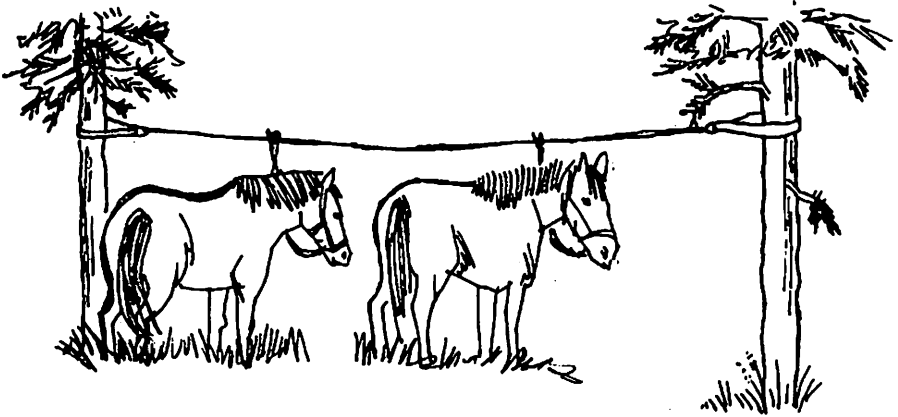
Someone should be designated to tend the horses regularly to ensure that all are safe and that no damage is being done to the area. Always keep an eye out for problems. If a rope is long enough for a horse to nibble at the ground, it is long enough for him to step over it. A horse in trouble can do irreparable damage both to itself and the environment.

Wet or boggy ground is too fragile to withstand the repeated trampling associated with tied or corralled horses. Evaluate the specific site for each highline or corral. If a tie-up area also catches enough breeze to discourage insects, there will be less pawing and stomping. Insect repellent can also help prevent this kind of damage. Well fed, well watered horses will be more content. Nervous or bored horses that paw while tied should be hobbled as well as tied.

The methods highlighted below are presented from generally lesser to greater degrees of impact.

Saddle Hobbles. A lightweight but sturdy pair of leather or nylon hobbles can be carried for short-term restraint, espe-

cially while the horse is under your immediate supervision. They are great for short stops while traveling or as you first make camp and begin the unloading procedure. A horse thus hobbled is free to graze a short distance away while you attend to other animals and tasks.



Highlines. In many areas, this is the preferred low-impact method for restraining horses in camp because it prevents horses from trampling the root systems around trees. Find an area of dry, hardened ground or a site where the least ground cover will be disturbed. Stretch a rope a little over horse-head high between two live trees at least 8" in diameter. Tie lead ropes at intervals along the highline, away from tree trunks. The ropes should not be able to slide along the highline; this will prevent horses from getting tangled with each other. Additionally, there should be no long loops in the lead ropes which a horse could step over or wrap around its neck. Horses properly tied to a highline have freedom of movement yet are in little danger of getting hurt, and the highline prevents horses from damaging the root systems around trees.

To ensure that the highline does not girdle trees, use wide nylon "tree saver" straps or use several loops of a lash rope to spread the constricting force. Gunny sacks can be used for additional bark padding if necessary. When saddling or unsaddling, adjust the height of the highline so saddle horns won't hang up on it.

Temporary Corrals. A two-rope corral can be set up to contain horses. When setting up the rope corral, use an area with hard,

rocky ground. The corral should be as large as possible to prevent over-trampling of the area. This type of corral is easy to put up and easy to move. Pad all trees to protect the bark from damage.

Portable electric fencing is becoming popular for backcountry use. As no trees are required, it is ideal for use in open areas or desert. It is light-weight, versatile and easy to set up and move. You will need to acquaint your horses with it before the trip. New corrals and hitchrails should not be constructed from logs or poles, as their use in the past has created lasting impacts, such as trees cut down for use as poles; damage to standing trees from nails, lashings and ax cuts, and pole corrals left standing after camp is broken.

Tying to trees. Horses should be tied to trees only for short periods of time. If you do have to tie up (e.g., while you set up a highline), select a live tree at least 8" in diameter. A tree of this size can resist some trampling of the roots and damage to the bark. Wrap the lead rope around the trunk twice before you tie the knot. This will prevent most of the damage the rope can do to the bark.

Grazing Restraints. Once in camp, free roaming horses grazing on good grass cause little long-term impact. However, limiting travel during grazing is a major concern for the horse user and is a major cause of impact in horse camps. A helpful principle to remember is: *more confinement can generally be equated to more impact.* For example, horses on picket do more damage than hobbled horses. More confinement concentrates impact and may contribute to restless behavior. Remember also that a well fed, well watered horse will be more content and less apt to paw or dig, no matter what grazing restraint is used.

Loose grazing. Horses, confined only by their own herd-bound instincts cause the least impact. Every group of horses has a few members which lack the courage or the ambition to leave the rest of the bunch. If you can identify these individuals, you can restrain them simply by confining their "buddies" or leaders.

Hobbles. This method of restraint causes very little environmental impact. The idea behind hobbling horses is to give them freedom to graze yet restrict their travel to the general area near camp. Since many horses learn to move freely with hobbles, keep one or two

wrangle horses on pickets or within an electric fence. Place bells on “ring leaders” or “loners” to help you keep track of your horses.

Electric Fence. This is a popular method for restraining grazing animals. The fence is easy to set up and move around. The fence must be moved periodically to ensure that the area is not overgrazed. Terrain that is impossible for picketing, such as an area with many rocks or bushes, may be fine for electric fence.

Pickets. Picketed horses require good feed. Choose the site carefully and make sure it is free of obstacles. Pack in your picket pins; do not cut trees to make them. Remove those that have been left by others. Move the pins frequently to prevent overgrazing and trampling—as much as every few hours. It is past time to move the picket when you can see a circle beginning to show. When possible, rotate hobbled horses with those on pickets or in an electric fence. This helps ensure all stock get enough feed and water.

Picketing two wrangle horses is usually better than picketing only one. A single horse can get anxious if left alone and may paw the ground or injure itself. Picketing a “bell mare” or “ring leader” may help keep the hobbled horses in the general vicinity. Most horses require a little time to learn how to be picketed. It is best to teach them at home under close supervision.

Picketing horses can be very hard on soil and vegetation and is not allowed by land management agencies in some areas where meadow plants are not robust enough to withstand the repeated trampling of hooves and rubbing of the picket line. Know local regulations and how much use a particular meadow can stand when evaluating the type of feed available at each particular camp.

Watering Horses. Wet marshy areas, stream banks, ponds and lake edges are very susceptible to trampling, bank erosion and pollution. Water your horses at an established ford or low rocky spot in the bank where little damage will occur. Encourage the hobbled horses to water there as well.

Many watering places are small or contain sensitive vegetation and fragile soils. Consider watering horses away from the source to prevent damage to these sensitive riparian areas. A water bucket is handy in such cases as well as in the kitchen.

Supplemental Feed. In some areas, forage is limited; in others, grazing may be restricted by regulation. Meadows should always be left in the best possible condition for those who follow and so that plants can recover from grazing pressures. Fifty percent is often used as a *maximum* utilization guideline.

The use of supplemental feed can reduce grazing time and amount of live feed utilized. A small ration of supplemental feed can also be used as a "bribe" to remind horses that camp is Home.

Processed and pelletized feed is a good source of nutrition. It is more concentrated than hay and thus will help keep weight and bulk to a minimum. The seeds of many weeds and non-native species can be found in unprocessed feed which can grow and then compete with native plants. To lessen this problem, avoid packing in uncertified hay or unprocessed grain. Feeding certified hay and feed one day prior to your trip will help prevent the unwitting transport of weeds in horse manure, and allows you to check that your horse will eat the feed that you bring.

As an alternative to placing feed on the ground, consider putting it in a simple nose bag or on a manti. A full ration can be eaten without waste; less pawing, trampling and close-cropping of the grass should occur. A feed bag can also be hung from the highline.

In Popular Areas, Concentrate Use

Concentrating use on durable surfaces is a simple and effective method of reducing the impact of your backcountry visit. Main travel corridors and popular destinations typically have well-established trails and campsites. Make decisions and choose practices that will cause the least amount of damage and leave only short-term impacts.

Stay on trails. Impact on wildlife, soil and vegetation can be minimized by traveling on constructed trails that, in many cases, have been designed to accommodate heavy use. Ride single file on the designated path. Do not shortcut trails or switch backs. Muddy

stretches and most snow banks should be crossed, rather than skirted. If you carry a saw, you can help local land managers by cutting and removing deadfall in the trail. Rerouting trails around obstacles causes vegetation damage, erosion and development of multiple paths.

Horses in a string cannot be perfectly managed. The attentiveness of the horse packer, length of the string and traveling pace are all factors affecting string management. If extremely difficult terrain must be negotiated, loose herding may be best while negotiating such terrain. Animals that are free to place their feet around obstacles are less likely to cause damage to the ground, to themselves, and to their handlers.

Pull off for rest breaks. When taking rest breaks, choose a site well off the trail so that others are not forced to leave the trail to go around you. When possible, pull off on a durable surface such as dry grass or sand. For short breaks, you may be able to hand-hold your horses; however, if you must tie up, choose live trees at least 8" in diameter and wrap the lead rope around the trunk twice before you tie the knot. For extended breaks, use hobbles, highlines, or pickets. Tend the horses often. Nervous horses which trample or paw the ground while tied can be hobbled to prevent damage to the tree roots. Manure piles should be kicked apart and scattered, and any pawed ground should be filled in.

Choose an established campsite. Selecting an appropriate campsite is an extremely important aspect of low-impact backcountry use. A decision about where to camp should be based on the amount and type of use in the area, the fragility of the vegetation and soil, the likelihood of wildlife disturbance, an assessment of previous impacts and your party's potential to cause or avoid more impact.

In most areas, camps should be at least 200 feet from water or trails. Even in popular areas the sense of solitude can be enhanced by choosing a more out-of-the-way site or a site with natural screening. This also benefits other users and wildlife that often utilize the same trail systems. Be sure to obey any local regulations concerning campsite selection. Allow enough time to select the appropriate site so that tiredness, bad weather and lateness of day won't force you to cut corners and choose poor or fragile campsites.

In popular camping areas, the minimum-impact choice is to use existing legal campsites. This minimizes the proliferation of unnecessary campsites within an area. These sites are usually obvious because they are already "hardened": have already lost their vegetation cover. Careful use of such sites will cause no additional damage. It may also be possible to find a site that naturally lacks vegetation, such as gravely soils or sandy areas.

Place tents on already hardened areas. A site with a slight slope has good natural drainage, eliminating the need to "trench" around your tent. Light-weight nylon tents have their own poles, eliminating necessity to cut trees for tent poles. Do not break off tree limbs or pull out vegetation to make a spot more comfortable. If you need



River Otter

to remove rocks or bits of wood, put them back where you found them when you break camp.

The kitchen is a place where people tend to congregate. This area will usually receive the most impact, so put the kitchen in the most resilient and

impacted location available. In any campsite, especially with large groups, traffic between the kitchen, tent sites and tack area is bound to create trails. Stay on paths that are already established. The objective is to confine your impact to areas that already show use and avoid enlarging the area of disturbance.

The use of Scrim, an open-weave cloth, can lessen impact in such high-use areas and stock containment areas. Used as a ground covering, it lets air and moisture through, allowing vegetation to breath and grow, and buffers the grinding action caused by boot heels and hooves.

Leave a clean campsite. To ensure that other visitors arriving at popular destinations use existing campsites, it is important to leave each site clean and attractive when you leave. An existing site that has litter scattered about or food scraps lying in the fire ring is not appealing.

As you break camp, make an effort to leave it cleaner and more natural than you found it. If you cleared an area of surface rocks,

twigs or pine cones, replace these items before leaving. Dismantle or remove inappropriate user-built facilities such as multiple fire rings, nails in trees, trenches and constructed seats or tables. Properly located and legal facilities, such as a single fire ring, should be left. Dismantling them will cause additional impact because they will be rebuilt with new rocks and thus impact a new area. Alternative methods for fire-site construction are discussed under "Use Fire Responsibly."

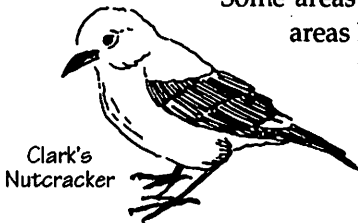
Kick apart and scatter piles of manure. If manure is in the central camp area, carry it well away for dispersal. This will hasten its decomposition and lessen the aesthetic impact on the area for other users. Pawed places must be filled in not only for visual impact, but to prevent deeper holes and further damage.

Practicing good Leave No Trace techniques will help set the right example for others. It will also improve the odds that you will find the camp inviting on your next trip into the backcountry.

Destination camps. Some parties ride into the backcountry with only one destination in mind. You can reduce impact in destination camps by sending out extra horses for the length of your base camp stay with a friend or member of your party.

When a group spends multiple nights in one campsite, much more care is needed to protect the area from overuse. More forage is required for the horses. Picket pins and electric fence have to be moved again and again in order to prevent overgrazing and trampling. Only with considerable determination and commitment can you keep the area of disturbance from growing larger.

Some areas cannot withstand this type of use. Others areas have been set aside in hopes that surrounding campsites will not be so heavily impacted and damaged. Make it a group effort to leave the camp in excellent condition so it can sustain decades of such use.



In Remote Areas, Spread Use

Remote or pristine areas are quite fragile, and it is easy to create long-lasting damage. A horse party heading off cross-country in mountains or timber will often run into many obstacles. The potential for creating new and unnecessary trails is great. If you do travel cross country, take extreme care to minimize impact by you and your horses.

Traveling cross country. The key to preventing the development of trails in a remote area is to spread out and disperse your impacts. It is best not to travel single file. By limiting the number of times hoof prints fall in the same place, the chance of doing long-term damage to the vegetation is greatly reduced.

Durability of the ground surface is the most important consideration in determining exactly where to travel. When traveling off-trail, stay on durable, dry ground and ride around fragile areas such as wet, boggy ground and steep slopes. Spread out and avoid going straight downhill or uphill by traveling in a switchback fashion, each rider taking their own route. Finally, when traveling cross-country, allow other travelers the same thrill and challenge of route finding. Do not mark your route by building cairns, using plastic flagging or blazing trees.

Camping in remote areas. When choosing a remote or pristine campsite, look for a durable surface such as exposed bedrock or dry grassy areas on which to place kitchen and tents. In high deserts, gravelly areas with little vegetation are ideal. Forest duff (large areas of dead needles, cones and twigs) is acceptable if it is possible to avoid crushing plants and seedlings. Such sites are quite resilient and capable of recovering rapidly from the effects of one night of low-impact use. Spread out tents, avoid repetitive traffic routes and *move camp each night*. The objective is to minimize the number of times any part of the site is trampled.

When breaking camp, take time to naturalize the site. Manure piles should be kicked apart and scattered, and pawed ground should be filled in. Extra firewood should be scattered. Cover scuffed up areas with native materials, brush out footprints and

rake matted grassy areas with a stick to help the site recover and be less obvious as a campsite. Other travelers will be less likely to camp in the same spot. The less often a pristine campsite is used, the better chance it has of remaining pristine.

Avoid Places Where Impact Is Just Beginning

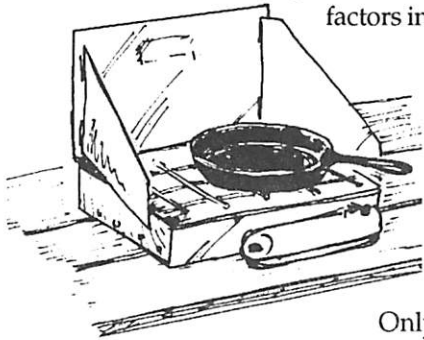
Most campsites can withstand a certain level of use. However, a threshold is eventually reached where the regenerative power of the vegetation cannot keep pace with the amount of trampling. In many forested regions this may occur after only 10 days of use per season. Once this threshold is reached, the site will deteriorate more rapidly with continued use. This results in the development of an established campsite. The threshold for a particular site is affected by many variables including climate, soil type, elevation and aspect. All of these factors determine what species of plants will grow on the site, how durable the site is and to what degree it will be degraded by erosion.

Avoiding campsites and trails that show slight signs of use allows time for these areas to recover. If left unused these campsites and trails can revegetate and revert back to their natural appearance. By camping on durable surfaces in remote areas and staying in well-established campsites in popular areas, it is possible to minimize or prevent the proliferation of unnecessary campsites.

Use Campfires Responsibly

The use of campfires in the backcountry was once a necessity for cooking and heat, but the development of versatile and efficient campstoves has facilitated a shift away from the traditional fire. With increased use of the backcountry, the natural appearance of many areas has been compromised by overuse of fires and an increasing demand for firewood. Stoves are now almost essential equipment for minimum-impact camping. They are fast and flexible, and eliminate firewood availability as a concern in campsite selection.

If you typically depend on fires for cooking, consider using a stove instead, and build a social fire just one or two nights of your trip. A lightweight candle lantern or small gas lantern makes a pleasant alternative light source. The most important factors in determining whether or not to have a fire are:



1. Wind conditions and overall fire danger.
2. The availability of the right amount and type of firewood.
3. Administrative restrictions.

Firewood availability and selection.

Only one type of wood is acceptable for building a low-impact campfire—*dead and downed wood*. Do not break dead branches off trees, alive or dead, standing or downed. Broken branch stubs and scars are obvious, long-lasting impacts. Instead, collect loose sticks and branches from the ground.

The size of firewood is critical to building a Leave No Trace Fire. Firewood should be no larger in diameter than an adult's wrist and should be small enough to be broken by hand. Small wood is easier to burn completely, leaving less ash and half-burned logs to clean up.

Firewood should be gathered away from camp so the immediate vicinity does not look unnaturally barren. Take the time to walk five or ten minutes away from camp before gathering wood. Pick up the wood as you are walking so that no single place becomes denuded. Gathering small wood in this fashion eliminates the need for saws, axes and hatchets.

During foul weather times such as late season hunts, fires may be heavily relied upon for cooking and warmth. The same principles should apply: use only dead and downed wood, cut only what you think you will need, use the entire piece of wood, and use (or carry with you) all the wood you have already cut. Be careful to minimize the sign of chips and sawdust, which detract from the naturalness of the area.

Care and feeding of your fire. Do not break wood into burnable lengths until you are ready to feed it into the fire. If there is any unburned wood left when you break camp, the unbroken lengths can be scattered to blend in naturally with the surroundings.

Whenever you are not in camp, the fire must be put out completely. Forest fires caused by unattended campfires are not part of the natural processes and account for millions of dollars of damage every year. You should be able to place your hands in the cold fire pit and feel no warmth from embers.

All firewood should be burned down to white ash or very small coals. This may require some extra time, but it is a significant step in minimizing the impact of the fire. All fires should be cleaned up before breaking camp.

Fires in high-use areas. In high-use areas, where impacts should be confined to durable sites, campfires can be built in existing fire rings if there is sufficient firewood. In these sites, it is almost certain that there will be a fire ring present when you arrive. Build a fire only if there is a sufficient wood supply or you have brought wood from another area.

In popular campsites, encourage others to use a central fire ring by leaving it clean. Remove any residual trash and burn all wood completely to ashes. When the fire is *completely out*, crush any cooled charcoal. If the pit is full, scatter charcoal over a large area well away from camp. Such care helps avoid the proliferation of multiple fire rings in popular sites.

Fires in remote areas. If you choose to build a fire in remote or pristine area, it is possible to enjoy it and Leave No Trace that it was ever there. Techniques for these types of fires have evolved over the years to the point that there are some very practical alternatives to the traditional fire ring.

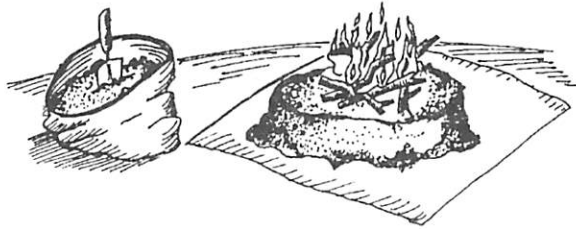
The heat from fires or stoves can cause impact, and so can the concentrated trampling of people cooking or socializing. Take care to select a durable site for *any* use of fire.

The mound fire. An innovative method for building a Leave No Trace fire is the mound fire. Mound fires can be built virtually anywhere using simple tools: a garden trowel or shovel, large stuff sack and a ground cloth.

To build this type of fire, begin by locating a ready source of mineral soil, sand or gravel. Mineral soil is the light-colored dirt that is found below the dark, rich, organic topsoil layer. Gather mineral soil from a spot that is already disturbed by natural forces;

where the impact of digging and collecting the mineral soil will not damage live vegetation. Sand or small gravel collected from stream beds or lake shores are good sources of mineral soil, as are the holes left by the roots of a recently downed tree.

Use the garden trowel to fill a stuff sack with mineral soil. Turn the sack inside out to keep the inside of the bag from getting dirty. Carry a load of mineral soil to the fire site. To make clean-up easier, lay a tarp or ground cloth on the fire site and then spread the soil



into a circular, flat-topped mound about 6 to 8 inches thick.

The thickness of the mound is critical for insulating the surface underneath from the heat of the fire, and to prevent the ground cloth from melting. The circumference of the mound should be larger than the size of the fire to allow for the inevitable spreading of coals. It may take more than one bag of soil to make an adequate mound.

After the fire is out and you are ready to break camp, scatter the small amount of ash and coals well away from camp and return the mineral soil to its source.

The advantage of the mound fire is that it can be built on flat exposed rock or on an organic surface such as litter, duff or grass.

Portable Fire Pans: A fire pan is a metal tray with rigid sides at least three inches high. Metal oil drain pans and some backyard barbecue grills make effective and inexpensive fire pans. A few outdoor companies are beginning to market lightweight versions. When using a fire pan, elevate the pan with rocks or line it with

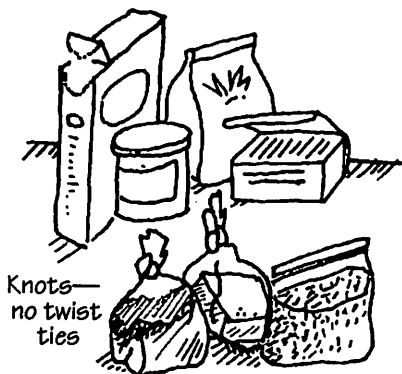


several inches of mineral soil gathered from a downed tree hole or stream side so the heat does not scorch the ground.

Wood-burning stoves. Small, portable wood-burning stoves are often used for heating and cooking. These stoves are popular and have been available for years. Improved designs have minimized weight and increased efficiency.

Pack It In, Pack It Out

Pick up and pack out all of your litter. On the way out, when the panniers are light, try to pick up litter left by others.



Reduce litter at the source. When preparing for your trip, repackage food into reusable containers or remove excess unnecessary packaging. This makes less to pack in and less to haul back out.

Trash. Trash is the non-food waste brought into the backcountry, usually from packaged products. The best bet is to carry out all trash. Some paper items can be burned in a campfire, but much of the

paper packaging used today is lined with non-burnable foil or plastic. These paper products should be packed out with the cans, plastic, foil and glass.

Small bits of trash are common problems. Cigarette butts, candy wrappers, twist ties, polypropylene cord and tangled fishing line should all get placed in the trash bag and packed out.

Garbage. Garbage is the food waste left over from cooking. Careful meal planning can easily reduce this waste and minimize the amount of leftovers. In the event you do have leftovers, they should be eaten later or put into a plastic bag or other container and packed out. Burning food waste requires a very hot fire (see special considerations for bear country), and burying this type of waste is inappropriate because animals will dig it up if it is buried. Animals,

from squirrels to bears, habituated to humans as a source of food can become a nuisance or even a threat to humans. Consider the words “Leave No Trace” a challenge to take out everything possible that you brought into the backcountry.

Properly Dispose of What You Cannot Pack Out

As visitors to the backcountry, we create certain types of waste which usually cannot be packed out. These include human waste and waste water from cooking and washing. Wastes from fishing and hunting are also concerns.

Human waste. Proper disposal of human waste is important to avoid pollution of water sources, the spread of disease and the aesthetic consequences to those who might see it. If provided, outdoor toilets are the first choice for waste disposal. Burying human feces in an appropriate location and manner is currently the most effective practice where these don't exist.



Catholes. The “cathole” method is the most widely accepted means of waste disposal. Locate catholes at least 200 feet (about 70 adult steps) from water, trails and camp. Select a site which is inconspicuous, where other people will be unlikely to walk or camp. With a small shovel or garden trowel dig a hole 6 to 8 inches deep and 4 to 6 inches in diameter. After use, cover the cathole with soil and disguise it with natural materials. If you are camping in an area for more than one night, widely disperse cathole sites.

Latrines. When camping with children or base-camping, you may want to follow a “concentration” approach to waste disposal. Select a latrine site with many of the same considerations as a cathole—far from water and camp, in an out-of-the-way spot where other people would not be likely to camp, and in soil that will allow you to dig a hole of sufficient depth. To make a latrine, dig a trench

six to eight inches deep, and long enough to accommodate the needs of your party. Soil from the trench is used to cover the feces. Naturalize the site when leaving. Waste concentrated in a latrine will decompose very slowly and pathogens may survive for years, so location is critical when selecting a site. The use of special enzymes packaged for use in RVs may increase the rate of decomposition.

Toilet paper. Use toilet paper sparingly and use only non-colored, non-perfumed types. Toilet paper must be disposed of properly! Either place it in plastic bags and pack it out or bury it deep in your cathole. Toilet paper should only be burned in a fire pit with a hot fire. Attempts to do otherwise have resulted in numerous instances of forest fires. The low-impact camper willing to go the extra mile might consider foregoing toilet paper altogether and using "natural" alternatives. Popular forms of natural toilet paper include aspen or sage leaves, stones, smooth sticks, fir cones and snow. Obviously some experimentation is necessary to make this practice work for you, but it is worth a try!

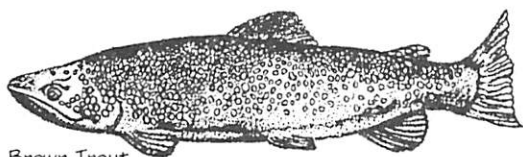
Urination. Urine has little direct effect on vegetation or soil. In fact, forms of urine are used as fertilizer. Research has found that urine poses very little threat to human health. In some instances urine may draw wildlife, which are attracted to the salts and may defoliate plants or dig up soil. If concentrated in one place, urine can create an aesthetic impact due to the odor.

Waste water from cooking. All dish washing should be done away from water sources. Soap is unnecessary for most dish washing jobs. It is difficult to rinse thoroughly and introduces unnatural chemicals to the backcountry. Hot water and a little elbow grease can tackle most cleaning chores. Waste water should be scattered over a wide area away from camps and all water sources, except in bear country. Remove all food particles from the water before disposal (a lightweight strainer is handy for this) and pack out the refuse with excess food and other litter.

Waste water from washing. The primary consideration when washing yourself or your clothes is to avoid contamination of water supplies. Soap, even if biodegradable, breaks down very slowly in

cool mountain water. It is best to minimize its use and not allow it to enter lakes or streams at all. If bathing with soap is necessary, get wet, lather up far from water (200') and rinse off with water carried in a pot. The soap will filter through the soil and break down before reaching any body of water. Clothes can be cleaned by thorough rinsing in plain hot or cold water. Residual soap on clothes can cause skin irritation.

Fishing and hunting. Fish viscera are generally a natural part of the ecosystem. In high-use areas consider burying them in a cathole to reduce the chance that other people will come across them. If you are just out fishing for the day, take your fish home to clean them and dispose of entrails there. In remote areas that



Brown Trout

receive little use, viscera can be scattered widely, out of sight and away from campsites. In bear country or where other animals might present a problem, keep odors away from people, trails and campsites. In this situation, puncture the air bladder and throw the viscera into lakes well away from shore, or in fast moving water to eliminate all odors.

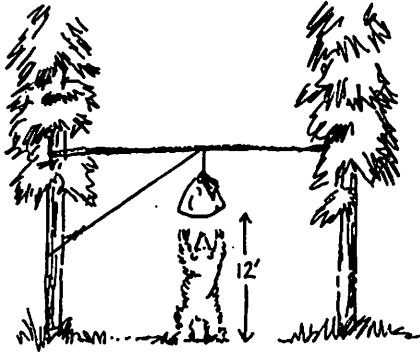
If you are a hunter, be courteous to other hunters and backcountry visitors by field-dressing game animals well away from trails and water. This will also help reduce encounters between people and scavenging wildlife. Remember to check with the local managing agency for specific hunting regulations or suggested practices.

Special considerations for bear country. When traveling where black bears or grizzly bears are present, camp organization and cleanliness take on a whole new significance. The primary concern here is safety, both for the visitor and for the bear. Personal safety is the first priority; a bear can be a very dangerous animal if provoked or habituated to humans. Safety of the bear is also a concern. Once a bear is habituated to people, usually because it associates people with food, it can rapidly become a "problem" bear and will have to be dealt with accordingly, often at the expense of its life.

Though black bears are usually perceived to present less of a threat to the personal safety of backcountry visitors than grizzly

bears, the potential for personal injury does exist and precautions should be taken.

Messy kitchens with strong food odors and food that is readily available can attract bears. In grizzly country, kitchens should be



placed at least 100 feet and downwind of sleeping sites. Use a sump hole in the kitchen area to concentrate waste water and odors. In all bear country, avoid creating large amounts of leftover food because cooked food has a strong scent. Try to eat all leftovers promptly. If you still have leftovers, either triple- or quadruple-bag them, or burn them a bit at a time in a hot fire in a tin can.

The food residues will be contained within the can, which can be stored with the food and packed out. The intent is to minimize food odors in the kitchen that may attract a bear.

Storing food and toiletries. All food must be properly stored so as to make it unavailable and uninviting to bears. This includes canned food, pop, beer, grain and sweetened horse feed, pet food, garbage, and scented or flavored toiletries. Either hang food, or store it in bear resistant containers that may be available through local Forest Service offices.

If you hang your food, it must be at least 10 feet off the ground and four feet away from tree trunks. Wildlife carcasses or parts of carcasses must be stored like food. Carcasses and food hangs should be located 100 yards from any sleeping area, trail, or recreation site. Even with these precautions black bears, who are particularly adept at climbing, may still reach your food. Food hangs, like kitchens, should be located downwind of sleeping areas. Food brought to your tent invites danger to your sleeping area as the bear searches for the source of the food odors.

Bear-resistant panniers and containers make food storage much easier in bear country. They are made of high-strength materials such as aircraft aluminum, with recessed lids and locking mechanisms. An approved container or pannier does not need to be hung. The Interagency Grizzly Bear Committee (IGBC) will approve containers that meet specifications. Check locally for the possibility of renting such containers.

Feminine hygiene products should be triple- or quadruple-bagged and packed out, or burned *completely* in a *hot* fire. In bear country, be sure to treat used sanitary products as food garbage. Leave them in the kitchen and hang them with food and trash while in camp. Under no circumstances should they be left in your personal gear, stored near sleeping areas or buried.

Be Considerate of Others

Many people go into the backcountry to enjoy the peace and solitude a wilderness setting can provide. With increasing numbers of backcountry users, this solitude can be hard to find. Being considerate of others and practicing good camp and trail etiquette ensures that *everyone* enjoys the visit.

Sound travels easily in the wilderness. Be aware of your noise level. If you use bells, try to keep away from other groups. If you bring pets (check local regulations) keep them under control at all times. A well behaved dog can be an excellent companion on a backcountry trip. Conversely, a rambunctious dog can create impacts by digging, barking and frightening horses and wildlife, which can detract from yours' and other people's experience.

Respect private property. Always get permission to use or cross private land.

Some backcountry users are unfamiliar with horses.

Few hikers know they should pull off on the downhill side of the trail, you may need to ask them to hold up while you pass. If instead, you are the one being overtaken, remember the hiker is packing a load and has a right to be on the trail too. Find a good spot to let them pass. A little conversation as you pass each other may reduce the chance of your horses being spooked.

Riding in small groups will reduce dust. It will also make meeting and passing other groups easier and safer, especially in rough, rocky terrain. Exercise caution when meeting loose dogs, llamas, pack goats, bicycles or motorized vehicles.

Any of these efforts work to create better understanding and appreciation between different backcountry user groups which benefits us all.

Wildlife. Respect for others includes wildlife. Keep your distance from birds and other animals so they are not forced to flee. We have the potential to greatly impact wildlife through direct contact and through habitat destruction. Never feed animals or leave food scraps where they might be eaten. If you travel with pets, ensure that they are never allowed to harass wildlife.

Leave What You Find

Allow others a sense of discovery by leaving rocks, plants, archeological artifacts, and other objects of interest as you find them.

Avoid damaging live trees and plants. Do not hammer nails into trees for hanging gear, hack at them with hatchets and saws or cut live trees for poles. Avoid girdling thin-barked trunks with tent lines. Cutting boughs for use as a sleeping pad creates minimal benefit and maximum impact. Inexpensive sleeping pads are readily available at stores catering to backcountry travelers.

Enjoy an occasional edible plant, but be careful not to deplete the surrounding vegetation. In remote areas, a good rule of thumb is to harvest only abundant species, and take only 10-20% from any site. In popular locations and national parks you should not pick any vegetation; take pictures or make a sketch instead.

Leave natural objects and cultural artifacts. Natural objects of beauty or interest, such as antlers or petrified wood, are appealing when you find them in the backcountry and should be left for others so that they too can experience that sense of discovery. In National Parks and some other areas it is illegal to remove natural objects.



The same ethic is applicable to the discovery and removal of cultural artifacts from public land. Cultural artifacts are protected by the Archeological Resources Protection Act, and it is illegal to remove artifacts from *any* public lands. This act protects all artifacts ranging from seemingly insignificant potsherds to arrowheads to ornate pots and clothing items.

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