



Bureau of Land Management
Environmental Education
Homepage



Teaching Leave No Trace

Principle #2: Travel and Camp on Durable Surfaces

Travel on Durable

Surfaces: The goal of backcountry travel is to move through the backcountry while avoiding damage to the land. Understanding how travel causes impacts is necessary to accomplish this goal.



Travel damage occurs when surface vegetation or communities of organisms are trampled beyond repair. The resulting barren area

leads to soil erosion and the debasement of unusable trails.

Backcountry travel may involve travel over both trails and off-trail areas.

Travel on Trails: Concentrate Activities When Traveling in Heavily Used Areas

.Land management agencies construct trails in backcountry areas to provide identifiable routes that concentrate foot and stock traffic. Constructed trails are themselves an impact on the land; however, they are a necessary response to the fact that people travel in the back country. Concentrating travel on trails reduces the likelihood that multiple routes will develop and scar the landscape. It is better to have one well-designed route than many poorly chosen paths.

Trail use is recommended whenever possible. Encourage travelers to stay within the width of the trail and not short cut trail switchbacks (trail zigzags that climb hill sides). Travelers should provide space for other hikers if taking breaks along the trail. The principles of off-trail travel should be practiced if the decision is made to move off-trail for breaks.

(Hikers in the same group should periodically stop to rest and talk. Avoid shouting to communicate while hiking. Loud noises usually are not welcome in natural areas.)

Travel Off-trail: Spread Use and Impact in Pristine Areas (except in some desert areas)

. All travel that does not utilize a designed trail such as travel to remote areas, searches for bathroom privacy, and explorations near and around campsites is defined as off-trail. Two primary factors increase how off-trail travel

affects the land: durability of surfaces and vegetation, and frequency of travel (or group size).

- Durability refers to the ability of surfaces or vegetation to withstand wear or remain in a stable condition.
- Frequency of use and large group size increase the likelihood that a large area will be trampled, or that a small area will be trampled multiple times.

Surface Durability: The concept of durability is an important one for all backcountry travelers to understand. The following natural surfaces respond differently to backcountry travel.

- Rock, sand and gravel: These surfaces are highly durable and can tolerate repeated trampling and scuffing. (However, lichens that grow on rocks are vulnerable to repeated scuffing).
- Ice and snow: The effect of travel across these surfaces is temporary, making them good choices for travel assuming good safety precautions are followed and the snow layer is of sufficient depth to prevent vegetation damage.
- Vegetation: The resistance of vegetation to trampling varies. Careful decisions must be made when traveling across vegetation. Select areas of durable vegetation, or sparse vegetation that is easily avoided. Dry grasses tend to be resistant to trampling. Wet meadows and other fragile vegetation quickly show the effects of trampling. Trampling ensures new travelers to take the same route and leads to undesirable trail derailment. As a general rule, travelers who must venture off-trail should spread out to avoid creating paths that encourage others to follow. Avoid vegetation whenever possible, especially on steep slopes where the effects of off-trail travel are magnified.
- Cryptobiotic crust: Cryptobiotic crust, found in desert environments, is extremely vulnerable to foot traffic. Cryptobiotic crust consists of tiny communities of organisms that appear as a blackish and irregular raised crust upon the sand. This crust retains moisture in desert climates and provides a protective layer preventing erosion. One footstep can destroy cryptic crust. It is important to use developed trails in these areas. Travel across cryptic crust should only be used when absolutely necessary. Walk on rocks or other durable surfaces if you must travel off-trail. In broad areas of cryptic crust, where damage is unable, it is best to follow in one another six foot steps so the smallest area of crust is affected exactly the opposite rule from travel through vegetation. (Cryptobiotic crust is also extremely vulnerable to mountain bicycle travel.)
- Desert puddles and mud holes: Water is a precious scarce resource for all living things in the desert. Don't walk through desert puddles, mud holes, or disturb surface water in any way. Potholes are also home to tiny desert animals.

Camp on Durable Surfaces: Selecting an appropriate campsite is perhaps the most important aspect of low-impact back try use. It requires the greatest use of judgment and information and often involves making trade-offs between minimizing ecological and social impacts. A decision about where to camp should be based on information about the level and type of use in the area, the fragility of vegetation and soil, the likelihood of wildlife disturbance, an assessment of previous impacts, and your party s potential to cause or avoid impact.

Choosing a Campsite in High-Use Areas: Avoid camping close to water and trails and select a site which is not visible to others. Even in popular areas the sense of solitude can be enhanced by screening campsites and choosing an out-of-the-way site. Camping away from the water's edge also allows access routes for wild life. Be sure to obey regulations related to campsite selection. Allow enough time and energy at the end of the day to select an appropriate site. Fatigue, bad weather, and late departure times are not acceptable excuses for choosing poor or fragile camp sites.

Generally, it is best to camp on sites that are so highly impacted that further careful use will cause no noticeable impact. In popular areas, these sites are obvious because they have already lost their vegetation cover. Also, it is often possible to find a site which naturally lacks vegetation, such as exposed bedrock or sandy areas.

On high-impact sites, tents, traffic routes, and kitchen areas should be concentrated on already impacted areas. The objective is to confine impact to places which already show use and avoid enlarging the area of disturbance.

When leaving camp, make sure that it is clean, attractive, and appealing to other campers who follow.

Camping in Undisturbed Remote Areas: Pristine areas are usually remote, see few visitors, and have no obvious impacts. Visit these special places only if you are committed to, and highly skilled in, Leave No Trace techniques.

On pristine sites it is best to spread out tents, avoid repetitive traffic routes, and move camp every night. The objective is to minimize the number of times any

part of the site is trampled. In setting up camp, disperse tents and the kitchen on durable sites. Wear soft shoes around camp. Minimize activity around the kitchen and places where packs are stashed. The durable surfaces of large rock slabs make good kitchen sites. Watch where you walk to avoid crushing vegetation and take alternate paths to water. Minimize the number of trips to water by carrying water containers. Check regulations, but camping 200 feet (70 adult steps) from water is a good rule of thumb.

When breaking camp, take time to naturalize the site. Covering scuffed areas with native materials (such as pine needles), brushing out footprints, and raking matted grassy areas with a stick will help the site recover and make it less obvious as a campsite. This extra effort will help hide any indication where you camped and make it less likely that other back trail travelers will camp in the same spot. The less often a pristine campsite is used the better chance it has of remaining pristine.



Camping in Arid Lands: The most appropriate campsites in arid lands are on durable surfaces, such as rock and gravel, or on sites that have been so highly impacted further use will cause no additional disturbance. Previously impacted sites are obvious because they have already lost their vegetation cover or the rocky soils have been visibly disturbed. If choosing this type of site, make sure your spot is large enough to accommodate your entire group.

A pristine campsite, with no evidence of previous use, is appropriate in arid lands provided it is on a non-vegetated, highly resistant surface. Expanses of rock,

gravel or sand are all excellent choices. It should never be necessary to camp on cryptobiotic soil, islands of vegetation, or within the precious green ribbons of desert creeks or streams. Beware when camping on sandy river bottoms and areas susceptible to flash floods.

Cooking areas, tents and backpacks should be located on rock, sand, or gravel. Consciously choose durable routes of travel between parts of your camp so that connecting trails do not develop. Vary your routes since the objective is to minimize the amount of trampling and compaction on any specific part of the campsite. Limit your stay to no more than two nights.

Never scrape away or clean sites of organic litter like leaves, and always minimize the removal of rocks and gravel. The organic litter will help to cushion trampling forces, limit the compactability of soils, release plant nutrients, and reduce the erosive forces of rainfall. Disturbing the lichen-coated and varnished rocks known as desert pavement can leave a visible impact for hundreds of years. Once overturned, these rocks are difficult to replace and the lichens and varnish will not grow back within our lifetime.

Camping in River Corridors: River corridors are narrow strips of land and water with little room to disperse human activities. Campsites are often designated. It is generally best to camp on established sites located on beaches, sandbars, or non-vegetated sites below the high-water line.