

NORTH AMERICA



**Leave No Trace**  
SKILLS & ETHICS



The Leave No Trace educational program promotes skills and ethics to support the sustainable use of wildlands and natural areas. The concept originated in the U.S. as a way to help recreationists minimize their impacts while enjoying the outdoors. In 1991, the U.S. Forest Service teamed with the National Outdoor Leadership School (NOLS) and the Bureau of Land Management as partners in the Leave No Trace educational program. NOLS, a recognized leader in minimum-impact camping practices, became involved as the provider of Leave No Trace materials and training.

Today, the non-profit organization The Leave No Trace Center for Outdoor Ethics, established in 1994, manages the national program. The Center unites four federal land management agencies—the U.S. Forest Service, National Park Service, Bureau of Land Management, and U.S. Fish and Wildlife Service—with manufacturers, outdoor retailers, user groups, educators, and individuals who share a commitment to maintain and protect our wildlands and natural areas for future enjoyment.



# LEAVE NO TRACE

## *Outdoor Skills & 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*

**NORTH AMERICA EDITION**

*"The notion that [outdoor] recreation has no environmental impacts is no longer tenable."*

—Curtis H. Flather and H. Ken Cordell, *Wildlife and Recreationists*

People enjoy the outdoors in myriad ways. We explore on foot, kayak, horseback, mountain bicycles, skis, snowshoes, and crampons, to name a few, and there are more of us pushing our sports to greater extremes and into remoter parts of the natural world everyday. Our experiences are personally satisfying, but they can be costly to the places we visit and the animals we observe.

America's wildlands are diverse and beautiful. They can also be fragile. Polluted waters, displaced wildlife, eroded soils, and trampled vegetation are just some of the impacts linked directly to recreational activities. Even our mere presence has an influence. Considerable damage could be prevented if recreationists were better informed, especially about Leave No Trace techniques.

This booklet is part of a national educational program called Leave No

Trace which aims to be part of the solution. At the heart of LNT are seven principles for reducing the damage caused by outdoor activities, particularly non-motorized recreation. Leave No Trace concepts can be applied anywhere—in remote wilderness, city parks, even in our own backyards—and in any recreational endeavor.

Leave No Trace principles and practices extend common courtesy and hospitality to other wildland visitors and to the natural world of which we are all a part. They are based on an abiding respect for nature. This respect, coupled with good judgment and awareness, will allow you to apply the principles to your own unique circumstances.

We can act on behalf of the places and wildlife that inspire us—in North America and beyond. First, let's educate ourselves and adopt the skills and ethics that enable us to *Leave No Trace*.

**At the heart of LNT are seven principles for reducing the damage caused by outdoor activities, particularly non-motorized recreation.**



# LNT Outdoor Skills and Ethics

## PRINCIPLES OF *Leave No Trace*

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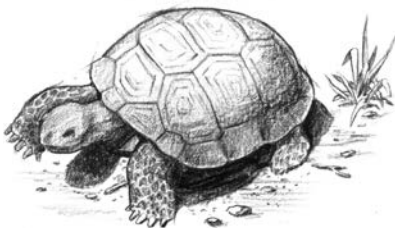
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## LNT Outdoor Skills and Ethics LIBRARY



Visitors interested in stock use, mountain biking, kayaking and climbing, or other regions and recreational activities, are referred to the other booklets in the Leave No Trace Skills and Ethics series.

**Information on obtaining Leave No Trace curriculum materials, courses and trainings is available by calling Leave No Trace, Inc.**

**1-800-332-4100**  
or visiting the extensive  
LNT website: [www.LNT.org](http://www.LNT.org).

## PLAN AHEAD *and* Prepare



**Plan ahead by considering your goals and those of your group. Prepare by gathering information, communicating expectations, and acquiring the technical skills, first aid knowledge, and equipment to do the trip right.**

Build Leave No Trace into your plans by picking an appropriate destination for your group and allowing plenty of time to travel and camp in good style. Be prepared to sit tight or turn back if you sense danger or sustain an injury. That way, you won't have to abandon Leave No Trace techniques for the sake of safety. For instance, poor planning or disregard for approaching bad weather can transform an easy hike into a risky encounter with hypothermia. Cold and wet, it's tempting to think that the impacts of poorly sited campfires and makeshift shelters are warranted.

### **EDUCATE YOURSELF.**

Know the regulations and special concerns for any area you visit. Because every wildland is unique, regulations and permit stipulations vary. Learn how to Leave No Trace wherever you go. Start by asking about local ecology and local minimum impact practices and guidelines.

Land management agency websites, offices, and visitor information centers offer information on special regulations, environmental concerns, and trip planning, as well as education and volunteer opportunities. Other information sources include sporting goods suppliers, bookstores, clubs and non-profit groups, local conservation organizations, libraries and nature centers. These sources can often be contacted online.

### **PLAN FOR YOUR GROUP.**

Recreation managers can suggest places suited to your group. Your group, its skills, and behavior should fit well with your wildland destination. For example, people expect some noise and commotion around picnic areas, large campgrounds, and developed recreation sites. In the backcountry, visitors want to experience nature without these distractions.

## PLAN AHEAD *and Prepare*

### *Small versus large groups.*

Regardless of the size of your group and the purpose of your outing, the practice of Leave No Trace techniques requires care and forethought. Whenever possible, visit wildlands in small groups. Large groups can be boisterous and disruptive unless they are well supervised. If you are planning for a large group, try to include enough experienced leaders so the group can be divided to hike and, if possible, camp separately. Avoid problems by teaching everyone about Leave No Trace before leaving home. Always, inquire about group size limitations in advance. Large and less knowledgeable groups are best accommodated in popular places, where there are already developed trails and campsites.

### **SCHEDULE YOUR TRIP TO AVOID TIMES OF HIGH**

**USE.** Visits to popular wildlands during peak use periods, such as holidays and weekends, are often fraught with traffic, crowding, delays,

and conflicts with other groups. Instead, visit at other times, such as midweek, for a less crowded—and more enjoyable—experience. Or, explore out-of-the-way places. Make reservations and obtain permits well ahead of time to avoid unpleasant surprises. Avoid travel when environmental conditions, such as muddy trails, make recreation impacts more likely or severe.

**USE PROPER GEAR.** Prepare for extreme weather, hazards, and emergencies. Pack a camp stove and fuel, a pot, matches, a signal mirror, and whistle or fluorescent vest. Always carry a good map, plenty of food, water, a water filter or purification tablets, warm clothing, and protection from the sun and insects.

Equipment that keeps us safe can also reduce impacts to our surroundings. A camp stove, which provides a quick meal without charring a single stone, is a prime example. On muddy trails—where we might want to step on trailside vegetation to



## PLAN AHEAD *and* Prepare

keep our feet dry—gaitors or weatherproof boots let us forge through the muck without getting wet.

**PLAN YOUR MEALS.** Adequate gear can be essential to the success of a trip, but it's a mistake to bring too much stuff. Get a jump on waste management by planning meals to avoid leftovers.

Package food in reusable containers or plastic bags.

Get rid of wrappers and heavy packaging in advance,

so you won't be tempted to leave them behind.

### **DEVELOP THE SKILLS.**

Know the skills and gear that are needed for your chosen activity. Learn from an experienced friend, take a course, or hire a competent guide. Make sure that first aid, navigation, and self-rescue are part of your training, and be sure you're in adequate physical shape for the trip. Leave No Trace practices vary geographically. In the BLM's Moab Field Office Area, UT, for example, it's important to know what cryptobiotic soils look like. In Everglades

National Park, FL, you'll be more concerned with potential impacts to marl prairies. Learn as much as you can about your destination and how to have fun there while staying safe and protecting the land.

### **TAKE RESPONSIBILITY.**

Getting lost has important implications for you, the people who attempt to find you, and the terrain. Significant impacts to the landscape can result from rescue operations that involve vehicles or large numbers of people. Take responsibility for your own safety by practicing self-awareness, caution and good judgment. Minimize risk by planning a trip that matches your skills and expectations. Be prepared to rescue yourself from tough situations.

Register at the trailhead or with the ranger. Be a competent navigator. Always carry a map and know where you are at all times. Stay with your group. Just in case, give a friend your itinerary and instructions explaining what to do if you don't return on schedule. Don't build cairns or deface rocks or trees to mark your way. Flagging should also be avoided. If flagging is absolutely necessary, be sure to remove it before leaving the area.





## TRAVEL AND CAMP on Durable Surfaces

**RECOGNIZE DURABLE SURFACES.** What effect does a footstep have? The answer is, it depends. A footstep means different things to a tree sapling and meadow grass, to leaf litter and cryptobiotic soil, to a gravelly river bank and rain forest moss.

Unfortunately, trampling causes vegetation damage and soil erosion in virtually every environment. Recovery that takes a year in the southern Appalachians might require 25 years or more in Glacier National Park, MT. Other impacts are also possible. Most pristine soils contain animals that live or feed on decaying plants. Trampling destroys habitat for these insects, earthworms, mollusks and snails, as well as the fungi that fertilize the soil and help make regrowth possible. Vegetation protects underlying soils. Once plant growth is destroyed, erosion can continue with or without further use.

Wherever you travel and camp, use surfaces that are resistant to impact such as rock outcrops, sand, gravel, dry grasses, snow or water.

**CONCENTRATE USE IN POPULAR AREAS.** In popular areas, concentrate use on trails, established campsites, and other developed sites such as trailheads and picnic



areas. Concentrating use in these areas and, if necessary, on the surfaces mentioned earlier, will minimize disturbances to soils and vegetation. Because animals learn to expect people on trails, they're less disturbed by encounters with people on-trail than off.

### *Stay on designated trails.*

On trails, walk single file in the center of the tread—even where it's wet, rocky or muddy. Trails become progressively wider and form parallel paths where people walk on trail margins or detour around obstacles. Likewise, "social trails" mar campgrounds and other popular areas. Always use established roads and trails to visit campsites and other places of interest. Short-cutting a trail, especially on switchbacks, has severe consequences. Short-cuts become trails or gullies that require costly restoration. Keep out of areas where efforts to restore vegetation and soils are in progress.

Boating, fishing and other water-based activities can damage shorelines, wetlands, and reefs. Inquire locally about how to minimize your impact on these resources. Always choose durable sites to launch, anchor and dock your boat, and avoid tide pools, coral reefs or sites rich in wildlife.

### *Use established campsites.*

Choose a well-established campsite that's big enough for your group. Some popular areas have officially designated campsites, shelters or platforms. Use of these amenities can reduce damage to vegetation and other natural features. Where campsites are not formally designated, look for and use sites where the ground cover is already worn away. Wear soft-soled shoes and concentrate your activities in the center of the site to avoid enlarging it.

In grizzly bear country, it is advisable to separate the sleeping and cooking areas. Otherwise, tents, packs, gear, and the kitchen area should be concentrated in one area on previously compacted, naturally resistant, or reinforced surfaces. This approach protects surrounding vegetation and prevents development of "satellite" sites.

Also consider your visual impact on other users or

wildlife. Take advantage of opportunities to tuck your tent out of view behind natural screening such as trees or rocks.

**GOOD CAMPSITES ARE FOUND, NOT MADE.** What makes the perfect campsite? Safety, privacy, and comfort never go out of style, and securing such amenities does not entail a major remodeling effort. We can bring our own lightweight furniture and conveniences along to eliminate the need to create them on-site. Camp stoves, mattresses, tables, chairs, lanterns—even solar showers—are readily available at reasonable prices, and they pack in and out with ease.

Leave your campsite clean and natural looking—naturalize it. In wildlands, we are visitors, but we are also hosts to those who follow. They will notice our hospitality, or lack of it. Litter, graffiti, tree damage, visible human and pet waste, unsightly fire rings and the like are senseless acts. By taking the time to pick up after ourselves and others, if necessary, we'll all benefit.

Trees are often damaged near campsites. Take care not to break off branches while securing tent or clothes lines, and when suspending food or game carcasses. Don't use wire or nails. Place a stuff

## TRAVEL AND CAMP on Durable Surfaces

sack or other material under ropes or where padding is necessary to protect bark. Likewise, place lanterns where they won't singe bark. When traveling with stock, use high lines, portable fencing or hobbles to restrain the animals without tying them directly to trees. Trees shouldn't be targets or storage sites for hatchets and knives.

Even in campsites, leave the area as natural as possible. Breaking off a tree branch for firewood creates an ugly scar and opens the tree to disease. Proper firewood collection is discussed under Minimize Campfire Impacts.

**DISPERSE USE IN PRISTINE AREAS.** Proliferation of trails and campsites has alarmed both resource managers and travelers across North America. Even where visitor use has remained relatively stable, such as the Spanish Peaks Wilderness, MT, campsites are sprouting up in traditionally low use areas. Visit remote or pristine areas only if you are committed to Leave No Trace in that environment. Using established routes, trails and campsites is always preferable to pioneering new ones.

If you must travel off-trail, use the most durable surfaces such as rock, snow and ice, gravel, sand, and navigable

water. Dry grasses and sedges (which resemble grasses) are also naturally durable due to



their hardy root structures and flexible stems.

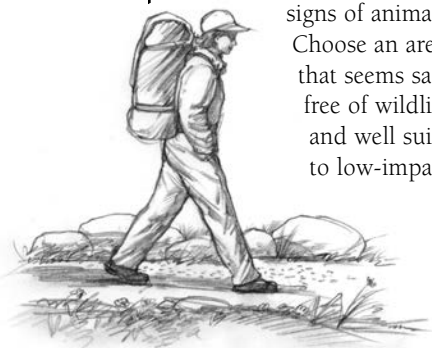
Stick to existing trails where soils are prone to erosion, rare species are present, or vegetation grows slowly. Surprisingly, some of the most sensitive plants and animals grow in the toughest places—like the sandy soils of southern Utah and the rocky ledges of upstate New York.

***Avoid creating trails and campsites.*** Consult local land managers about off-trail travel and the appropriate use of game trails. In general, spread out when hiking across vegetation. If each person takes a slightly different route, a distinct trail is less likely to form because no single plant receives multiple footfalls. Walking single file is acceptable where there is little chance of trampling plants.

## TRAVEL AND CAMP on Durable Surfaces

Off-trail travel may not be appropriate in some areas. For example, golden mountain heather grows on a few rocky ledges in the Pisgah National Forest, NC, and nowhere else on earth. Off-trail hikers and climbers are the only serious threats to its survival. If you absolutely must travel through fragile terrain, try to place your footsteps in the least destructive locations and encourage your companions to step in exactly the same spots.

**Campsites.** Select the most durable camping location possible. In pristine areas, pre-existing camping spots, even those that are lightly used, should be left alone to recover. Before unpacking your tent, look for obvious bird nesting activity and other signs of animals. Choose an area that seems safe, free of wildlife, and well suited to low-impact



camping. Look for a large rock slab, a graveled area, or other equally durable space to locate your kitchen. Concentrate your activities on

this surface whenever possible to protect more fragile areas. If necessary, reserve less durable ground for your sleeping area.

***In pristine areas, impacts can often be avoided by staying only one night.*** In these areas, vary your route to water, to the “bathroom” and to sleeping areas to prevent trails from forming. In general, manage your activity to avoid harming the natural features of the site, especially those that do not regenerate or do so very slowly—such as lichens and trees.

**BREAKING CAMP.** Before departing, naturalize and disguise the site by replacing any rocks or sticks you may have moved. Re-cover scuffed-up areas with leaf litter or pine needles. Fluff up matted grass and make the place less obvious as a campsite. As long as overall visitor use is very low, the site will retain its best qualities. Ideally, no trails or campsites will be created if visitors disperse their activities.

**PROTECT WATER RESOURCES.** Sand and gravel bars along large rivers or the ocean are durable surfaces that may be suitable for low-impact camping. However, vegetated lakeshores and the banks of

## TRAVEL AND CAMP on Durable Surfaces

small streams are fragile and easily eroded. Plants and animals also congregate at these water sources, so camp at least 200 feet (70 adult steps) away unless local guidelines indicate otherwise. In arid regions, this practice gives wildlife vital access to pot-holes and springs. By distancing camps from water, we are less likely to inadver-

tently pollute them.

Even designated sites or shelters can be too close to trails or water because of terrain limitations or a long history of use. Continued use of such sites is preferable to the creation of new ones.

## DISPOSE of Waste Properly

**PACK IT IN, PACK IT OUT.** “Pack it in, pack it out” is a familiar mantra to seasoned wildland visitors. Any user of recreation lands has a responsibility to clean up before he or she leaves. Inspect your campsite and rest areas for trash or spilled foods. Pack out all trash and garbage (kitchen waste), including leftover food.

Plan meals to avoid generating messy, smelly garbage. It is critical to wildlife that we pack out kitchen waste, such as bacon grease and leftovers. Don't count on a fire to dispose of it. Garbage that is half-burned or buried will still attract animals and make a site unattractive to other visitors.

Overlooked trash is litter, and litter is not only ugly—it

can also be deadly. Plastic six-pack holders and plastic bags kill shorebirds, sea turtles and marine mammals.



Fishing lines, lures and nets ensnare and injure everything from dogs to herons, so don't leave any behind.

Carry plastic bags to haul your trash (and maybe some-

## DISPOSE of Waste Properly

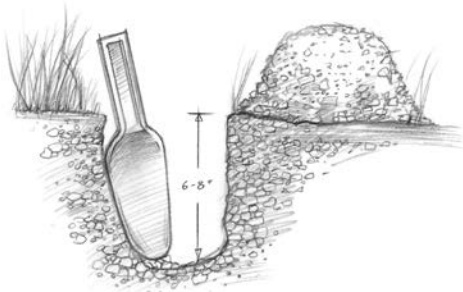
one else's). Before moving on from a camp or resting place, search the area for "micro-garbage" such as bits of food and trash, including cigarette filters and organic litter like orange peels, or egg and pistachio shells. Invite the kids in your group to make a game out of scavenging for human "sign."

### PRACTICE GOOD SANITATION.

#### Human waste

"¿Dónde está el baño?" "Ninahitaji kujisaidie?" No matter how it's said, "Where's the bathroom?" is an important question, even in wildlands. Where there is no bathroom per se, answering the call involves a little pre-planning, some initiative, and a bit of creativity. The four objectives of proper human waste disposal are:

- Avoid polluting water sources.
- Eliminate contact with insects and animals.
- Maximize decomposition.
- Minimize the chances of social impacts.



Improper disposal of human waste can lead to water pollution, the spread of illnesses such as *Giardia*, and unpleasant experiences for those who follow. Wherever soils are thin or sparse, such as the arctic tundra or above treeline, rainstorms can flush food wastes and other pollutants from campsites directly into water sources. Contaminated water is common near shelters and huts in the White Mountains of the northeastern U.S. during the summer. Both livestock and wildlife can also be responsible for the presence of bacteria in wildland areas.

#### *Facilities / outhouses.*

Whenever possible, take time to locate and use bathrooms, outhouses, and other developed sites for human waste disposal.

**Cat holes.** If no facilities are available, deposit solid human waste in "cat holes" dug 6 to 8 inches deep at least 200 feet from water, camp, trails, and drainages. Bring a trowel to dig the hole, and disguise it well after use. The microbes found in soil will break down feces and the pathogens they contain. Don't leave human waste under rocks because it will decompose slowly there and may wash into water sources. If

## DISPOSE of Waste Properly

the cat hole method is ill suited to your group, try to camp where an outhouse or pit toilet is available.

Good cat hole sites isolate waste from water sources such as lakes, streams, dry creek beds, ravines, bogs, pot holes, and other visitors. Whenever possible, use a remote location during the day's travel to help prevent high concentrations of cat holes near campsites.

Plan ahead to pack out the toilet paper with you in a plastic bag. This practice leaves the least impact on the area. Otherwise, use as little as possible and bury it deeply in the cat hole. Burning toilet paper at the site has caused wildfires, rarely burns completely, and is not recommended. "Natural" toilet paper like grass, sticks, and snow can be surprisingly effective. Always pack out feminine hygiene products because they decompose slowly and attract animals.

**Latrines.** When traveling with children—and in other situations where cat holes may not be used properly—it might be best to dig a latrine. Site the latrine as you would a cat hole and make sure that the route to the latrine is over durable surfaces. Dig a trench 6-8 inches deep, and long enough to accommodate the needs of your party. Use

soil from the trench to cover the feces after each use. Dispose of toilet paper by packing it out in a plastic bag or burying it at the bottom of the trench. Naturalize the site before leaving.

**Carrying waste out.** Visitor use is often high and soils sparse in alpine and desert areas. Recreation managers trying to protect human health and water sources employ a spectrum of toilet designs and approaches to managing human waste—even airlifting waste with helicopters. One option is to carry and use a home-made container such as a "poop tube" or a commercial device designed for transporting human waste. Dispose of the contents in pit toilets, porta-johns, or according to package instructions. Local land managers may recommend other appropriate disposal techniques.

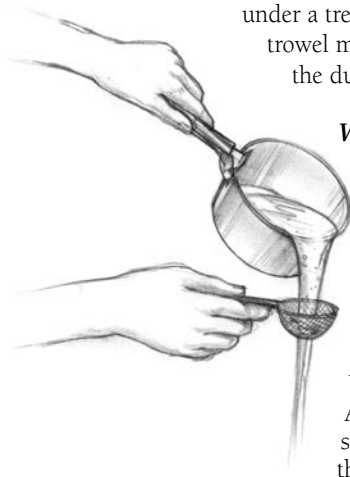
**Urine.** While the odor of urine can be a problem in arid areas, especially along river corridors, it is typically not a health concern. Urinate well away from camps and trails. In rainy environments, urine attracts wildlife with salt-deficient diets. Animals sometimes defoliate plants to consume the salt in urine, so urinate on rocks or bare ground rather than on the

## DISPOSE of Waste Properly

vegetation. Where water is plentiful, consider diluting the urine by rinsing the site.

### Special Environments.

**Winter.** Winter conditions present special challenges. Water is everywhere—it just happens to be frozen—and the soil may be several feet out of reach and as hard as a rock. Poop tubes or other “packing out” products may be the best disposal options unless you can locate a patch of bare ground, usually under a tree where a trowel might penetrate the duff.



### Waterways.

Carrying a portable toilet has become a standard practice on many waterways and may be required. At the conclusion of a trip, the toilet's holding tank is flushed out at an RV or boat dump station. The station delivers the waste and toilet paper to a municipal sewage treatment plant. The dumping of solid human waste in landfills is usually illegal. While on a river, be sure to site the toilet on a durable spot where no new trails will be created to reach it.

**WASTEWATER.** To wash yourself or your dishes, carry water 200 feet away from streams or lakes. Scatter strained dishwater. Hand sanitizers that don't require rinsing allow you to wash your hands without worrying about wastewater disposal.

For dish washing, use a clean pot or expanding jug to collect water, and take it to a wash site at least 200 feet away from water sources. This lessens trampling of lakeshores, riverbanks and springs, and helps keep soap and other pollutants out of the water. Use hot water, elbow grease, and little or no soap. Strain dirty dishwater with a fine mesh strainer before scattering it broadly. Do this well away from camp, especially if bears are a concern. Pack out the contents of the strainer in a plastic bag along with any uneaten leftovers. Animals should not be allowed access to any human food and food waste for reasons discussed in the “Respect Wildlife” section on page 21.

In developed campgrounds, food scraps, mud and odors can accumulate where wastewater is discarded. Contact your campground host for the best disposal practices and other ways to Leave No Trace at your campsite.



## DISPOSE of Waste Properly

### SOAPS AND LOTIONS.

Soap, even when it's biodegradable, can affect the water quality of lakes and streams, so minimize its use. Always wash yourself well away from shorelines (200 feet), and rinse with water carried in a pot or jug. This allows the soil to act as a filter. Where fresh water is scarce, think twice before swimming in creeks or pot-holes. Lotion, sunscreen, insect repellent and body oils can contaminate these vital water sources.

### DISPOSE OF GAME

**ENTRAILS.** The remains of fish and other game should be left well away from trails, water sources, and campsites. In some situations, it may be appropriate to bury, completely burn, or pack out the viscera with the garbage. Official guidelines and recommendations vary considerably from place to place, so call ahead for specifics.

## LEAVE What You Find

***People visit wildlands for many reasons, among them to explore nature's mysteries and surprises. When we leave rocks, shells, plants, antlers, feathers, fossils and other objects of interest as we find them, we pass the gift of discovery on to those who follow.***

It's the missing elements of our favorite places that should disturb us the most. Leave What You Find means retaining the special qualities of every wildland area—for the long term.

**PRESERVE THE PAST.** Discovering evidence of earlier cultures such as clay pots, rock art, and antique glass is exhilarating, and it's tempting to take such things home as souvenirs.



## LEAVE What You Find

Archeological and historical artifacts are reminders of the rich human history of the landscape and belong to all people for all time. Structures, dwellings and artifacts on public lands are protected by the Archaeological Resources Protection Act and the National Historic Preservation Act and should not be disturbed. These include seemingly insignificant potsherds, arrowheads and logging or railroad equipment from 50 or more years ago. It is illegal to excavate, disturb or remove these resources from any public lands. Observe but do not touch them.

### **LEAVE NATURAL FEATURES UNDISTURBED.**

Load your camera, not your packs. Let photos, drawings and memories comprise your souvenirs. Although natural objects may be collected on some public lands, a permit is often required. Collecting is prohibited in



national parks and wildlife refuges. Federal law applies to wildlands. For example, the federal Migratory Bird Treaty Act protects the nests and feathers of certain wild birds. Practice and encourage restraint.

Help children investigate the role of sea shells and other natural objects in their own environments. Remind



them that these things fill important ecological niches: an antler is gnawed by a kangaroo rat; a scorpion finds shade under a piece of driftwood; some petrified wood shelters the entrance of a pika's burrow; and a feather is woven into the nest of an osprey. Objects in nature derive much of their beauty from their surroundings and never look quite the same back home.

### **AVOID SPREADING NON-NATIVE PLANTS AND ANIMALS.**

Invasive species of plants, animals, and organisms can cause large-scale, irreversible changes to ecosystems by eliminating native species over time. According to the U.S. Fish

## LEAVE What You Find

and Wildlife Service, invasive species have contributed to the decline of 42 percent of the country's threatened and endangered species. At least 1.5 million acres of National Park Service lands are severely infested. Invasive plants affect every habitat type found in national forests and Bureau of Land Management lands in the U.S. There is no effective treatment for many invasive species and we are losing the native, living natural heritage protected lands were intended to conserve.

Recreationists play a role in the spread of invasives by transporting live animals, plants and seeds, and agents of disease such as *Giardia*. The potential for new infestations increases every day as more and more outdoor seekers travel from one wildland to another around the globe. On campsites in the Bob Marshall Wilderness, MT, for example, three of the four most common species are non-native plants.

We can help prevent the spread of invasive species by following a few practical suggestions.

- Don't transport flowers, weeds, or aquatic plants into wildlands.
- Empty and clean your packs, tents, boats, fishing equipment and other gear after every trip. Water,



mud and soil may contain harmful seeds, spores, or tiny plants and animals.

- Clean the dirt out of your boots or tire treads.
- Never discard or release live bait.
- Make sure pack stock and pets are immunized, and their coats are free of seeds, twigs, and harmful pests such as ticks.
- If you carry hay or other feed, make sure it's weed-free. Feed pack animals food that is certified weed-free for at least three days before entering wildlands.
- Help landowners or land managing agencies initiate control efforts by alerting them to infested areas.

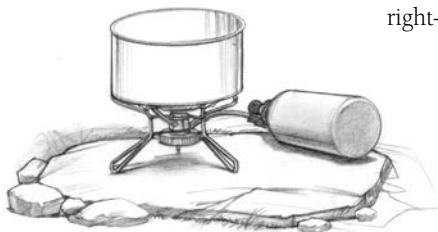
## MINIMIZE *Campfire Impacts*

***The natural appearance of many recreation areas has been compromised by the careless use of fires and the demand for firewood. Campfires are beautiful by night. But the enormous rings of soot-scarred rocks—overflowing with ashes, partly burned logs, food and trash—are unsightly. More important, campfires can and do ignite wildfires.***

Some of us grew up with the tradition of campfires. But they are no longer essential to comfort and food preparation. Many lasting impacts associated with campfires can be avoided by using lightweight stoves, fire pans, mound fires and other Leave No Trace techniques.

**USE A STOVE.** Visitors should carry a stove, pot, matches and sufficient fuel to cook all meals. Build fires

only when conditions are right—the



danger of wildfire is low, downed and dead wood is plentiful, and there is sufficient time to prepare the fire

site, burn all the wood to cold ash, and clean up.

Fires are inappropriate in fragile environments where plant growth is extremely slow. Wood from an arctic willow or alpine krumholz, which is hundreds of years old, will burn only a few short minutes.

**BUILD A MINIMUM IMPACT FIRE.** Consider whether a fire makes good sense at your picnic or campsite.

If a campfire is important to you:

- Ask about pertinent regulations and campfire management techniques.
- Judge the wind, weather, location, and wood availability. Decide whether it's safe and responsible to build a campfire.
- Where there are no fire rings or grates, bring a fire pan or set aside time to build a mound fire.
- Have a trowel or small shovel and a container for saturating the ashes with water.

***Use an established fire ring.*** If you camp near an existing rock ring, use it instead of building a new one. The most inviting fire rings are of a reasonable size and free of excess ashes, half-burned wood and trash.

## MINIMIZE *Campfire Impacts*

Leave a fire ring that encourages others who want a fire to use it.

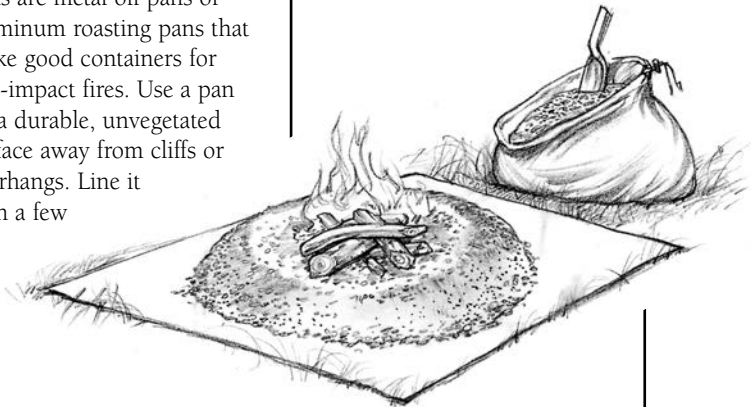
***Beach fires.*** A gravel bar or beach campfire is made by excavating a shallow depression in the sand or gravel along the shorelines of oceans or large rivers. Make sure to remove all the ash, and scatter it before refilling the depression. If left in place, the ash will “float” through the sand or gravel, and the fire site will be obvious to others.

***Pit fires.*** Pit fires are campfires built in a shallow pit where there is no overlying vegetation. Use gravelly, rocky or sandy sites only. Avoid organic soils and duff, and places where the fire could damage plants or other natural features. Remove and scatter the ashes before filling in and camouflaging the pit.

***Mound or pan fires.*** Fire pans are metal oil pans or aluminum roasting pans that make good containers for low-impact fires. Use a pan on a durable, unvegetated surface away from cliffs or overhangs. Line it with a few

inches of inorganic soil, and elevate it with stones to prevent damage to vegetation and soils below. Drill two or three holes through the side of the pan to attach it to a pack with cord for transport.

Mound fires are built on pedestals of sand, gravel, or on soil with a low organic content. Try to disturb as little vegetation as possible when collecting this material. Haul it to a durable fire site using a stuff sack (it will require several loads). Construct a pedestal 6-8 inches thick and 18-24 inches in diameter on top of a tarp or ground cloth. This helps facilitate cleanup. The cloth can be rolled up under the edge of the mound to prevent embers from singeing it. A thick enough mound insulates the ground and the tarp or ground cloth from the heat of the fire. Be sure to return the soil to its source when the fire is completely out.



## MINIMIZE *Campfire Impacts*

### USE DEAD AND DOWNED WOOD.

Keep fires small. Don't snap branches off of trees, either living or dead, because this scars them. For example, in the early 1980s, 95 percent of the trees in Eagle Cap Wilderness, OR, campsites were damaged by people collecting firewood or damaging tree trunks. Use

only sticks from the ground that



can be broken by hand. Larger pieces of downed wood play an important and unique role in nutrition, water cycling and soil productivity. They provide shelter for wildlife such as lizards and, while decaying, germination sites for many plant species.

Firewood smaller than the diameter of your wrist breaks easily and burns completely to ash, making clean up easier. Half-burned logs present a disposal problem—and often a disagreeable sight for the next campsite visitor. The use of hatchets, axes or saws isn't necessary or desirable. In the backcountry, gather firewood en route to your camp so the area around your site retains a natural appearance.

### MANAGE YOUR CAMP-FIRE.

No matter which campfire technique you employ:

- Never leave a fire unattended.
- Don't try to burn foil-lined packets, leftover food, or other garbage that would have to be removed later.
- Burn the wood completely to ash: Stop feeding the fire, and give yourself an hour or more to add all the unburned stick ends.
- Saturate the ash with water. Make sure it's cool to the touch, and remove any trash.
- Scatter all the ashes widely with a small shovel or pot lid.
- Restore the appearance of the fire site.

In popular areas, leave a single, small, clean rock ring centered in the campsite. Dismantle and clean up any extra fire rings. If a fire grate is present, don't build or use a rock ring. Leave the grate clean and ready for the next person. In remote areas, clean up thoroughly and disguise the fire site to make it appear as natural and untouched as possible.

## RESPECT *Wildlife*

***The stark truth is, if we want wild animals, we have to make sacrifices.***

—**Colin Tudge, *Wildlife Conservation***

Encounters with wildlife inspire tall tales and long moments of wonder. Unfortunately, wildlife around the world faces threats from loss and fragmentation of habitat, invasive species, pollution, over-exploitation, poaching and disease. Protected lands offer a last refuge from some, but not all, of these problems. Consequently, wild animals need recreationists who will promote their survival rather than add to the difficulties they already face.

We know that animals respond to people in different ways. Some species adapt readily to humans in their domain, resume their normal behaviors and are said to be “habituated.” Other animals flee from humans, abandoning their young or critical habitat. Still others are attracted and endangered by human food and trash.

Because outdoor recreation is dispersed over large areas and at all times of the year, its impacts on wildlife can be equally extensive. Fish, birds, and reptiles, as well as mammals, are affected by people using their habitats. We are responsible for coexisting peacefully with wildlife.

**OBSERVE FROM A DISTANCE.** Always watch or photograph animals from a safe distance to avoid startling them or forcing them to flee. Do not follow or approach them. If you’re hunting, know your game and take only safe, clean shots.

Use the observation areas, platforms and trails provided in many areas, and bring binoculars, spotting scopes, and telephoto lenses to watch wildlife. Back away if animals react to your presence. To leave the area, move away from the animal even if you must detour from your intended travel direction. You have more options in your



movements than animals do. Treat them generously.

Avoid quick movements and direct eye contact, which may be interpreted as aggression. Don’t disturb wildlife (i.e. by shouting to get their attention) to get a better photo. If animals are on the move, stay out of their line of travel. Travel quietly except in bear or mountain lion country. Don’t hike at night where

nocturnal predators may present a hazard to safety.

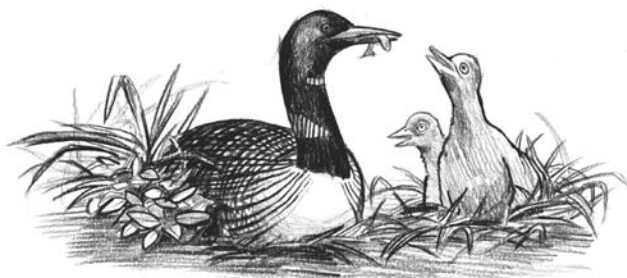
Adult behaviors influence the relationship of children to the natural world. Show respect and restraint by teaching children not to approach, pet or feed wild animals. Always keep children in immediate sight. They're often the same size as animal prey. Don't encircle or crowd wildlife, tease or attempt to pick up a wild animal. Young animals, removed or touched by well-meaning people, may be abandoned by their parents. If you find an animal in trouble, notify a game warden.

**AVOID SENSITIVE TIMES AND HABITATS.** Consider the seasonal stresses that wildlife face. In some situations, avoid their habitats, for your safety and the animals'. For example, in Mark Twain National Forest, MO, winter-time disturbance of endangered Indiana and gray bats greatly decreases their chance of survival. Grizzly bears fre-

quent berry patches in late summer in Montana. Eagles and songbirds are wary of humans and trails when choosing nesting territories in early spring in many wild-land areas.

In general, animals are sensitive to recreationists while pursuing and defending mates and territories, birthing, guarding young or nests, and when food is scarce. The more you understand about a species, the more considerate you can be of the animal's needs and temperament, especially at critical times and in critical places.

**NEVER FEED ANIMALS.** Feeding wildlife damages their health, alters natural behaviors, and exposes them to predators and other dangers. Headlines are made when wildlife is attracted to humans and their food. Bears get the most attention for tearing into tents, coolers and cars in search of a meal, but campers more commonly



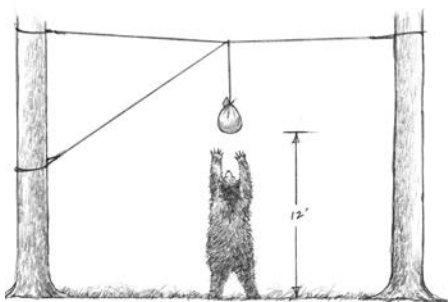


## RESPECT *Wildlife*

have to deal with the annoyance of rodents, raccoons or birds looking for a handout. These animals pose little threat to human safety, but their presence is a nuisance, they can be vectors for disease, and their reliance on human food is a detriment to their own well-being.

Human foods and products are harmful to wildlife because animals would otherwise forage and eat a nutritious diet derived from their natural environment. Serious illness or death can occur when wildlife consumes food wrappers, vehicle antifreeze and other “inedibles.”

Animals are adept opportunists. When offered the temptations of an untidy backcountry kitchen or a handout from a curious camper, they can overcome their natural wariness of humans. Aggressive or destructive behavior may follow, and in conflicts with humans, animals ultimately lose. Prospects of an easy meal also lure wildlife into hazardous locales such as campsites and trailheads, roads and entry points, where they can be chased by dogs or hit by vehicles. They may also congregate in unnatural numbers, increasing stress and the spread of disease within their populations.



**STORE FOOD AND TRASH SECURELY.** “Food” includes garbage, canned food, stock feed, pet food, fuel and scented or flavored toiletries. The salt in hiking boots, backpacks or clothing also attracts many small mammals. Appropriate storage and transportation methods vary considerably from place to place, so consult local land managers about the best practices. Keep a clean camp by removing all garbage and even the tiniest food scraps. Be careful not to drop food on the trail as well.

In bear country, hang “food” from tree limbs 12 feet off the ground, 6 feet from the tree’s trunk, and 6 feet below the supporting limb, or store it in specially designed bear-resistant canisters or on-site lockers. Canisters are available for rent and sale at sporting goods suppliers and some land management agencies. Used properly, they ensure a good night’s sleep for you and a natural diet for bears.

## RESPECT *Wildlife*

### **CONTROL YOUR PET.**

Wildlife and pets are not a good mix—even on a leash, dogs harass wildlife and disturb other visitors. The best option is to leave them at home. Obedience champion or not, every dog is a potential carrier of diseases that infect wildlife.

If you must travel with your pet, check for restrictions in advance. Most national parks prohibit dogs on all trails. Ensure your animal is in good condition for the trip. Dogs should have current vaccinations to avoid being carriers of or contract-

ing infectious diseases such as rabies and parvo-virus, especially in areas with wolf populations. Always use a collar and a short leash to control your dog. Remove pet feces from trails, picnic areas, and campsites by disposing of it in a cat hole, as you would human waste, or in a trash can.

## BE CONSIDERATE *of Other Visitors*

***Today, we must share wildlands with people of all recreational persuasions. There is simply not enough country for every category of enthusiast to have exclusive use of trails, lakes, rivers, and campgrounds.***

Yet the subject of outdoor “etiquette” is often neglected. We’re reluctant to examine our personal behaviors, least of all in wildlands where, to many, a sense of freedom is paramount.

**RESPECT OTHER VISITORS AND PROTECT THE QUALITY OF THEIR EXPERIENCE.** Some people visit wildlands to enjoy quiet and solitude. Others come for comraderie. Even remote wildlands are under increasing use pressure. So, whenever possible, find an established campsite out of sight and sound of other visitors.

Choose to maintain a cooperative spirit in wildlands. Our interactions should reflect the knowledge that we can and do rely on each other when mishaps occur. More often than not, our experiences ultimately

## BE CONSIDERATE of Other Visitors

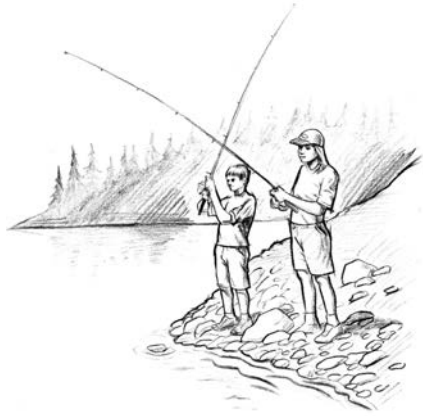
depend on our treatment of others and their attitudes toward us. Although our motivations and sense of adventure vary, there's always room on the trail for people with open minds and generous hearts.

**YIELD TO OTHERS.** The little things are often the most important. Simple courtesies such as offering a friendly greeting on the trail, wearing earth-toned clothing to blend in with the scenery, stepping aside to let someone pass, waiting patiently for a turn, or preserving the quiet, all make a difference.

Show your respect to native peoples whose communities and seasonal camps support a subsistence lifestyle in a wildland setting. Be friendly, unobtrusive and self-sufficient. Take note of tribal land boundaries, ask permission to cross private lands, and obey special laws and restrictions. Uphold voluntary closures of public lands for Native American religious ceremonies.

Likewise, don't disturb the livestock or equipment of ranchers, anglers, loggers, trappers, miners and others who derive their income from the permitted use of public lands. Leave gates open or shut, as you find them.

Groups leading or riding livestock have the right-of-



way on trails. Hikers and bicyclists should move to the downhill side and talk quietly to the riders as they pass, since horses and other pack stock frighten easily. Stay in control while moving quickly whether you are jogging, skiing or riding a mountain bike. Before passing others, politely announce your presence and proceed with caution. Boaters, climbers, campers and other visitors to popular areas frequently find themselves waiting in line. Lend a hand, if appropriate, to help those ahead.

**KEEP A LOW PROFILE.** Take rest breaks a short distance from the trail on durable surfaces, such as rock or bare ground. If the vegetation around you is thick or easily crushed, pick a wide spot in the trail so others can pass by. If possible, camp out of sight and sound of trails and other visitors.

## BE CONSIDERATE *of Other Visitors*

**LET NATURE'S SOUNDS PREVAIL.** Avoid the use of bright lights, radios, electronic games and other intrusive devices. To some, technology is a necessity even in wildlands. To others, it is inappropriate. Avoid conflicts by making a conscious effort to allow everyone his or her own experience.

Some outdoor activities are necessarily loud. The dis-

charge of firearms can be heard for miles, the barking from a sled dog team almost as far. As much as possible, keep the noise down, especially at night or in remote areas. Sight-in rifles on a firing range. Teach dogs to be quiet. Wear headphones to listen to music. Keep voices low. Use cellular phones discreetly. Most of all, tune in to the sounds of nature.



***Those of us with a stake in the future of wilderness must begin to develop... an agenda which will place a clear, strong, national focus on the question of the responsibility of the wilderness user to wilderness.***

**—Paul Petzoldt**

Paul Petzoldt believed in the power of the “wild outdoors” to make us better, more capable, compassionate people. Over a 70-year career he traveled wild lands around the globe teaching technical outdoor skills, leadership and “expedition behavior” to thousands of young adults. Paul was an advocate nonpareil of youth and wilderness. The father of “minimum impact” died in 1999 at the age of 91.

Like others, Paul noticed that outdoor recreation altered the land, but he was the first to develop a systematic approach to reducing the impacts of camping and outdoor travel. At first this meant tossing tin cans into the willows where they wouldn't be seen and building smaller fires. Ultimately, it meant an entirely new way of seeing and appreciating nature.

Paul thought that people could enjoy wildlands without harming them—if they were educated. Mil-



lions of outdoor enthusiasts have shared his dream of sustainable outdoor recreation. But that dream is fading as more and more acres are lost to development around the globe. The pursuit of non-motorized outdoor recreation, long considered a “non-consumptive” use of wildlands, is taking a toll on native species, the appearance of the land, and the quality of our experiences.

We can travel the world, climb the peaks, ride the waves, float the rivers, and sail down the single track, but we won't save a single acre unless we put our experiences to use as wildland advocates. The future of wildlands and wildlife depends on responsible recreation—and a whole lot more.

## A FINAL Challenge

Contact land management agencies and groups in your area to learn how you can help. Be active in the planning and management of areas that are important to you. Volunteer for clean up efforts, trail maintenance, and rehabilitation projects, or organize them for your local area. Get involved and let your opinions on land use be known. Today, that's what an outdoor ethic is all about.

Information on obtaining Leave No Trace curriculum materials, courses and trainings is available by calling 800-332-4100 or visiting the extensive LNT website: [www.LNT.org](http://www.LNT.org).

Another resource for visitors using motorized or mechanized craft or vehicles is the Tread Lightly program. Contact Tread Lightly, Inc. at (800) 966-9900 or [www.treadlightly.org](http://www.treadlightly.org).

## A FEW TERMS Defined

- cryptobiotic soils:*** Living soil "crusts" containing mosses, lichens and algae.
- established campsite:*** Campsite made obvious by devegetated ground or "barren core."
- invasive species:*** Plant or animal that aggressively out-competes native species.
- pristine:*** A place where signs of human impacts are absent or difficult to detect.
- social paths:*** Paths created by travelling on non-durable surfaces between campsites and other sites of interest.
- krumholz:*** Stunted forest characteristic of timberline.

Written by Tami Pokorny

Illustrations by Scott Knauer



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