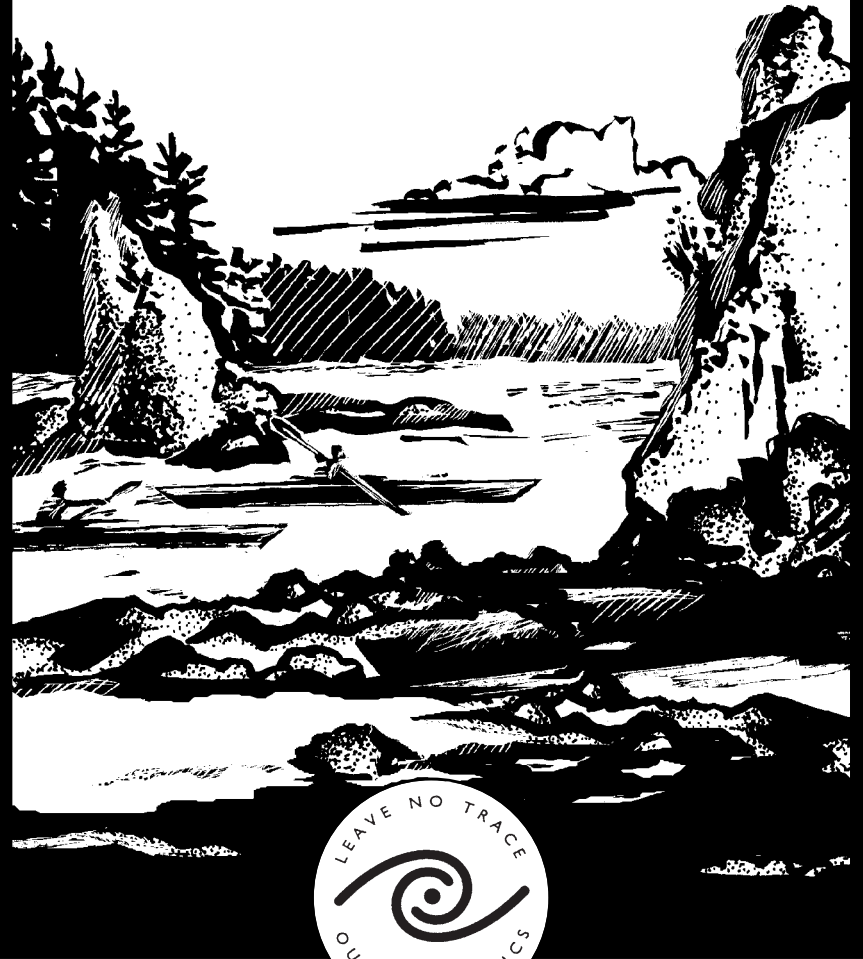


LEAVE NO TRACE

OUTDOOR SKILLS & ETHICS

Temperate Coastal Zones

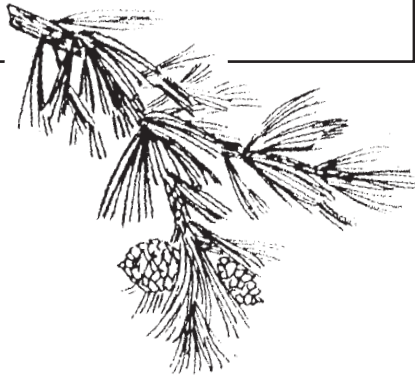


Wildland Ethics

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*.

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

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As increasing numbers of people seek the beauty and exhilaration of outdoor recreation, our collective mark on the environment and natural processes increases. Water pollution, litter and disturbance to vegetation, wildlife and other people are all indicators of the need to develop a national ethic that protects wild and scenic areas. Techniques designed to minimize the social and environmental impacts to these areas are incorporated into the national Leave No Trace education program as the following Leave No Trace principles:

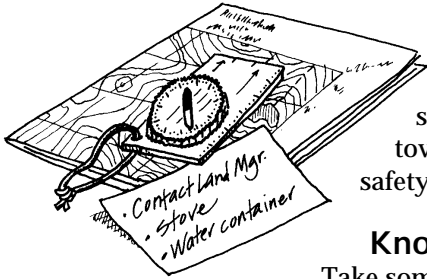
Principles of Leave No Trace

- Plan Ahead and Prepare
- Camp and Travel on Durable Surfaces
- Pack It In, Pack It Out
- Properly Dispose of What You Can't Pack Out
- Leave What You Find
- Minimize Use and Impact from Fires
- Respect Wildlife

These principles are recommended as a guide to minimizing the impact of your boating and hiking visits to the temperate coastal regions of North and South America. Before your trip, check with the U.S. Forest Service, National Park Service, U.S. Fish and Wildlife Service, Bureau of Land Management, state parks, or other managing agency for advice and regulations specific to the area you plan to visit. First and foremost, it is important to carefully review and follow all agency regulations and recommendations; this booklet is intended to support and complement agency guidelines.

Leave No Trace depends more on attitude and awareness than on rules and regulations. Minimum-impact camping practices must be flexible and tempered by judgment and experience. Techniques are continually evolving and improving. Consider the variables of each place – soil, vegetation, wildlife and the type of use the area receives. Then use this information to determine which recommended practices to apply. Knowing that you are minimizing your impact on the land and on other visitors, you will enjoy your trip even more.

Plan Ahead and Prepare



Carefully designing your trip to match your expectations and outdoor skill level is the first step in being prepared. While impact concerns are secondary to visitor safety, careful planning can go a long way toward ensuring that compromises between safety and minimum impact are unnecessary.

Know the area and what to expect.

Take some time to think about your goals and the expectations for your trip. Study maps and ask land managers or others who have been in the area for insights. Find out about specific camp sites, sensitive bird and animal populations, expected weather conditions and the likelihood of seeing others. If you plan a route in a popular area, plan to camp in established campsites. Only venture to remote areas if you are prepared to camp in pristine sites and practice stringent Leave No Trace techniques. Remember that on some public lands, camping outside of designated sites is not allowed.

Select the appropriate equipment to help you leave no trace. For example, lightweight camp stoves, free standing tents and collapsible water carrying containers give you the flexibility to camp in the most impact-resistant site available. Tide tables will help you find durable sites above expected high tide levels. Rubber boots that keep you dry even in deeper water and allow you the flexibility to select and walk the least impacting route. A small garden trowel is very useful for digging a minimum-impact cathole for burying human waste. Carry binoculars or high powered camera lenses to observe or photograph wildlife from an unobtrusive distance.

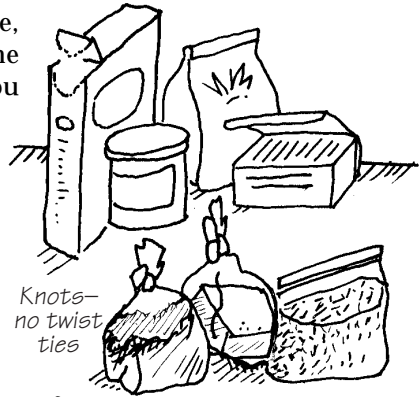
While traveling on the ocean, brightly colored PFD's and boats will help you be seen by other water traffic. On land, however, brightly colored garments and tents can detract from a wilderness feeling that passersby may seek. Earth-toned colors that blend in with the environment minimize visual impact and give others a greater sense of solitude.

Repackage food. Your impact on the environment starts before you depart on your trip. Repackage food from boxes, bottles and cans into reusable containers or plastic bags. In addition

to saving weight and space, repackaging will reduce the amount of potential trash you bring into the backcountry. Recycle packaging when possible.

Travel skills. Proper training and experience in traveling the coastline by kayak or foot is essential to your safety and to minimize your impact. For instance, if

travelers in remote coastal areas do not have the skills to kayak in building seas, they may be forced to camp in a place that's more fragile than the intended destination. Develop your paddling skills, weather awareness, coastal hazard awareness, leadership and first aid training before your trip. If some of these skills are new for you, get professional instruction or consider hiring an experienced guide.



Camp and Travel on Durable Surfaces

Wherever you travel and camp, it is best to confine your use to surfaces that are resistant to impact. When in popular or high-use areas, use well-established campsites and trails. These areas have been compacted with use and continued use causes little additional impact. In remote areas, spread use. The less concentrated use that a pristine spot receives, the more chance it will have to retain its pristine qualities.

Hike on durable surfaces and spread out when traveling on shore. Along stretches of coastline where there are no designated trails, hiking at low tide is generally best because the hard sand, gravel or rock of the intertidal zone (the area between the highest and lowest tides) is exposed. In this area you should still be careful to avoid crushing intertidal life such as mussels and barnacles. Hiking at high tide usually causes greater impact because the higher ocean level may force you to walk on fragile vegetation.

Use trails where they exist. In the temperate coastal zone, trails may be obscured by quickly growing vegetation. Look carefully if a trail is not immediately apparent. Walking outside the established trail to avoid rocks, mud, snow or overhanging vegetation tramples plants and contributes to erosion. To avoid creating additional paths, walk directly through muddy stretches and puddles whenever possible. Short-cutting switchbacks is never appropriate. Short-cutting saves little time and causes erosion and the formation of gullies.

Avoid fragile vegetation, such as broad-leafed flowering plants, tree seedlings, woody stemmed plants, mosses and lichens. In wet or boggy areas, all soils and plants are considered fragile. Where trail systems don't already exist, coastal hiking through vegetation is generally undesirable. If you must travel through vegetated areas, minimize the number of footsteps in any one place to avoid creating trails. Choose a route that minimizes damage to sensitive plants by walking on rocks, bare ground, or skirting around fragile places. Gravel is an example of a very durable surface and can often be found along streams and wildlife trails. Leaf litter, and dry grasses also make good choices for travel.

Keep group size small to minimize physical and social impacts. If you are camping with a large group, consider traveling in smaller groups during the day. A group of four to six people strikes a good balance between safety and environmental concerns. At camp, separate tent sites to disperse impacts.

Select durable ground, such as rock, gravel, sand, or snow for your campsite. This is perhaps the most important aspect of

minimum-impact backcountry use. Sleeping pads can make hard, bumpy, or cold surfaces comfortable for sitting and sleeping.

Some popular areas have officially designated campsites. Other areas have obvious, established sites that have lost vegetative cover. Further careful use of these established sites will cause virtually no additional impact.



If camping in a remote area, look first for an area of beach above the expected high tide line. You can often find durable sites here and tent platforms can easily be leveled out in the sand or gravel without creating lasting impact. Camp away from fresh water sources, animal trails, critical wildlife habitat and other campers. Avoid camping in the forest unless extremely foul weather or high tides make it necessary. If you must resort to vegetated areas, look for durable ground and avoid crushing plants or seedlings. Place tents, kitchen areas, gear storage areas and traffic routes on already compacted or resistant areas if possible. If you have few options, consider moving to a more suitable site.

In some situations, you may not find any appropriate choices for a tent site and moving on may be prohibited by factors such as ocean conditions, time of day, or even medical concerns. In these instances, look for a rock or gravel area for the kitchen even if the tent is placed on vegetation. Typically, the kitchen area receives the most use and is easier to place than a tent site. To help minimize the concentrated trampling that can cause lasting damage, vary your walking route to and from the cooking site and avoid fragile vegetation.

Choose a shelter site with a small slope so rain water can drain. Trenching around tents damages the soil structure and is unnecessary. Likewise, organic litter is important to the soil and should not be scraped away.

Before departing, make sure your camp is as clean or cleaner than when you arrived. In popular areas, dirty sites encourage future campers to choose new, undisturbed sites that may soon become trampled.

If using a pristine site, prevent long-term impact by naturalizing the spot after use. If you leveled out a tent platform in the sand or gravel, be sure to recover the platform so it blends with the rest of the beach. Cover scuffed-up areas with native materials, brush out footprints and rake matted areas with a stick to help the site recover and make it less obvious as a campsite. This extra effort will help hide any indication that you camped there and make it less likely that other users will camp in the same spot. The less often people use a remote campsite, the better chance it has of retaining pristine qualities.

Avoid places where impact is just beginning.

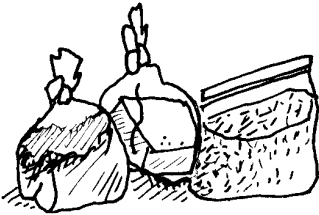
Campsites may recover completely from a limited amount of use. However, a threshold is eventually reached in which the regenerative power of the vegetation cannot keep pace with the amount of trampling. Continued use will cause such a site to deteriorate rapidly. The threshold for a particular site is affected by many variables, including vegetation type, soil fertility, and length of the growing season.

Avoid sites and trails that show signs of slight use.

These sites where impact is just beginning are best left alone to regenerate. In places with no well-established campsites, camp on durable pristine sites. In popular areas select pre-existing campsites.

Allow time for recovery. If they receive no further use, campsites and trails can revert to their natural state. With care, both high-use areas and less popular locations will contain only essential campsites and trails.

Pack It In, Pack It Out



Trash and garbage have no place in the backcountry. Consider the words "Leave No Trace" a challenge to take out everything that you bring into the backcountry. Pack out all of your litter. On the way out, when the space in your boat has increased or your pack is light, pick up litter left by others.

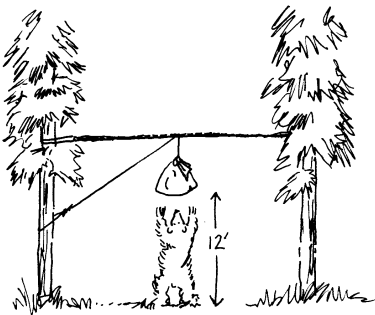
Dispose of trash and garbage properly. Trash is the non-food waste brought into the backcountry, usually from overly packaged products. Trash that appears burnable is often lined with non-combustible foil or plastic that leaves residual litter when burned. Pack out all trash unless you can burn it completely in a campfire. Never dispose of trash in outhouses. It creates a large and costly management burden.

Small pieces of trash such as twist-ties and candy wrappers often fall out of pockets and litter the backcountry. To alleviate this problem, unwrap individual snack foods and re-bag them in bulk at home. Cigarette butts can pose a fire hazard. Put completely extin-

guished cigarette butts and small scraps of trash, including spent gun shells, in a small, handy bag that you carry out.

Garbage is food waste leftover from cooking. Reduce this type of waste by carefully planning and preparing your meals. All food scraps including spilled or dropped particles from meal preparation, eggshells, apple cores and orange peels should be packed out. If you have leftovers, either save them to eat later or put them in a plastic bag and pack them out. Burning, burying, or sinking food in the ocean is not recommended. Burning food is often ineffective because campfires are usually not hot enough to completely consume the material. Buried waste is frequently dug up by animals and is not part of the local environment. Keeping food waste from animals, especially bears, is important to prevent them from becoming habituated to humans as sources of food and becoming nuisances around camp.

In bear country, keep tents, sleeping bags and personal gear free of food and other odors. Consider hanging food if there are large trees or established hanging sites. Place the kitchen area at least 100 yards away from and down wind of sleeping areas when possible. Be sure to store used feminine hygiene products and used toilet paper with the food garbage while in camp. Never bring any food or toiletries into your tent. Leave a clean campsite so you are not inadvertently endangering others who may come after you.



Properly Dispose of What You Can't Pack Out

Visitors to remote coastal areas create certain types of waste that are generally considered impractical to pack out. These include human waste and waste water from cooking and washing.

Dispose of human waste properly. Dispose of human waste properly. Proper disposal of human waste is important to avoid pollution of fresh water sources, the spread of illnesses such as Hepatitis A, and negative aesthetic consequences to those

who follow. The least impacting option is to pack out all waste, including human waste. Transporting human waste requires an adequate storage container and may be impractical for hiking or extended kayak expeditions. Human waste that is packed out must be disposed of at a RV dump station. It is illegal to dispose of human waste in landfills.

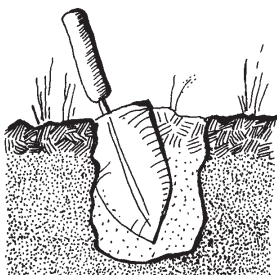
Outhouses and pit toilets exist in some popular areas and should be used when possible. Where toilet facilities do not exist and it is deemed impractical to carry out waste, a bit of knowledge and commitment is required for minimum-impact disposal.

There are five essentials to LNT sanitation practices:

- avoid polluting fresh water sources
- eliminate contact with insects and animals
- eliminate direct contact with humans
- maximize decomposition
- minimize the chances of social impacts

On the coast, there are two accepted methods for disposing of human waste: burial and ocean disposal. Choosing which method to use is not always obvious and usually requires careful consideration. If members of your group (e.g., groups of small children) are unable to deal effectively with these methods, it is best to choose campsites with an outhouse or pit toilet.

It is important to note that there is little significant research on human waste disposal in coastal environments. The methods of disposal that are explained below are the best available today based on current information. Future studies might result in changes to the recommended practices for recreationists.



Catholes. Catholes are a widely accepted method of waste disposal and, in many environments, the preferred method. Often on the coast, however, areas that make good campsites are too wet, too confining, or receive too much use for the cathole method to be effective. In these cases, consider ocean disposal. If ocean disposal has already been ruled out, you should either hike or paddle to a more appropriate location.

Catholes must be located at least 200 feet (70 adult steps) from fresh water, trails and camp. Avoid sites on sloped terrain or in gullies that may flow with water during heavy rain. Select a site that is inconspicuous, where other people will be unlikely to walk or camp.

To promote decomposition, choose a site in organic soil (topsoil), rather than deep, sandy mineral soil. With a small garden trowel, dig a hole four to eight inches deep and four to six inches in diameter. A plug of "sod" containing roots, soil and above-ground plant parts can be removed with careful digging and replaced without greatly impacting vegetation. After use, and before replacing the plug of sod, mix some soil into the cathole with a stick to further promote decomposition. Cover the cathole and disguise it with natural materials from the surrounding area.

Cathole sites should be widely dispersed. Think ahead to avoid concentrating catholes around campsites. Consider going for a short walk to find an appropriate site or use a remote location during the day's travel. These practices disperse impacts and lessen the chance of other visitors accidentally discovering your site.

Recent research indicates that buried feces decompose more slowly than previously thought. Pathogens were discovered to survive for a year or more when buried in a mountain site in Montana. The slow decomposition rate emphasizes the need to bury properly and to choose good bathroom locations far from fresh water, campsites and other frequently used places.

Ocean Disposal. The vast and dynamic ocean, rich in bacteria, is generally viewed as an acceptable environment for small scale human waste decomposition. Wave and current action quickly break down the feces into small pieces, which are then further broken down by the bacterial life of the ocean. If performed properly, ocean disposal will leave no signs along the coastline for the next visitor to encounter.

Two methods of waste disposal in the ocean are commonly suggested:

1) The first method doesn't require equipment but does require careful consideration of the shoreline, waves, tides, and current action to ensure that intertidal areas are not polluted.

- Assess the shoreline to determine if there is an accessible area with a strong movement of water. Headlands or rocky points are usually good sites for disposal; calm protected bays are not.
- Choose a site where the wind, waves, tides and current will take your waste away from camp and other campers.
- Take care to avoid tide pools, clam or mussel beds, and other sensitive areas.
- If there isn't a good place, consider the "cathole" method.

Avoid calm
tide pools.



Once you have chosen your site, find something such as a large, flat rock that you will be able to throw. You can then do your business on the rock at a comfortable distance from the water. Take the rock to the water's edge and throw it towards deep water. Shallow water is undesirable because of the

increased chance of exposing intertidal organisms to your waste and that the waste will be exposed on an outgoing tide. You will have better access to deeper water at low tides.

2) When traveling with boats, a small bucket with a tightly fitting lid and toilet seat will allow you to transport your waste to deep water away from shore. This will prevent your waste from polluting intertidal areas and make discovery of your waste by another party unlikely. Use a biodegradable RV potty fluid in your bucket and rubber gloves for emptying. The bucket should be emptied daily when possible. Take the bucket to deep water, away from shore, to an area that has significant wave or current action. After emptying, swish out the bucket with sea water and snap the lid in place. Remember to use an anti-bacterial soap for cleaning your hands.

Urination. Urine has little direct effect on vegetation or soil. Research shows that urine poses little threat to human health. However, urine can become an aesthetic impact due to its odor. Additionally, animals occasionally paw up ground and defoliate plants to get the salts deposited from urine. To avoid these impacts, urinate on rocks or sandy areas below the high tide line when possible.

Toilet paper and feminine hygiene products. Use toilet paper sparingly and use only non-dyed, non-perfumed brands. Toilet paper and feminine hygiene products do not decompose well and should not be buried or left behind. Pack them out in doubled plastic bags to effectively confine odors. The Leave No Trace camper willing to go the extra mile might consider foregoing toilet paper altogether and using natural alternatives. Popular types of natural toilet paper include clean stones, smooth sticks, moss and snow. After use, these materials can be buried at sea or on

land along with your waste. Obviously, some experimentation is necessary to make this practice work for you, but it is worth a try.

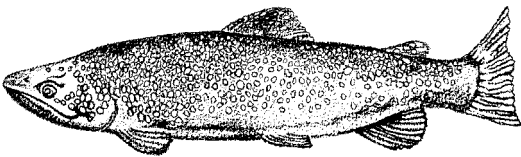
Minimize soap and food residues in waste water. Hot water and a little elbow grease can tackle most backcountry cleaning chores. Soap is unnecessary for most dishwashing jobs and can be difficult to rinse thoroughly. Remember to remove all food particles from the water before disposing of it and pack this waste out with other litter. Waste water should be thrown directly into the ocean or scattered below the high tide line.

Use soap sparingly when needed. For sanitary reasons, it is a good idea to wash hands with soap. Soap helps prevent the spread of bacteria and disease and is useful for cleaning wounds. Be sure that soap is handy for washing hands following human waste disposal and before meal preparation.

Soap, even if "biodegradable," can adversely affect flora and fauna so its use should be minimized. If you wish to bathe with soap, get wet, lather up on shore below the high tide line, and rinse off either directly in the ocean or with water poured over you from a pot or other container. Avoid lathering up directly in the ocean since this will probably cause you to use more soap than necessary. Soap doesn't lather up well in salt water but even small amounts still work for cleaning. Without soap, you can bathe directly in the ocean. When brushing teeth, spit toothpaste below the high tide line or into the ocean.

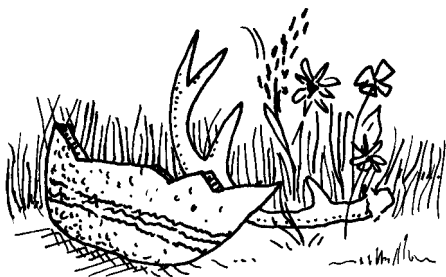
Fish viscera. Fish viscera are a natural part of the ecosystem; yet disposed of improperly they can be unsightly or attract bears. Clean fish at least 200 feet from cooking or camping areas.

Deposit the viscera far from camp in the ocean. If conditions permit and you have boats, paddle offshore and deposit the viscera in deeper water.



Brown Trout

Leave What You Find



People come to wildlands to enjoy them in their natural state. Allow others a sense of discovery by leaving rocks, plants, archeological artifacts, antlers and other objects of interest as you find them.

Minimize site alterations. In some situations minor site alterations when setting up camp are

acceptable. Moving downed branches or rocks for a better sleeping surface allows you to choose the best minimum-impact spots. Overhanging branches can often be temporarily tied back. On beaches, it is acceptable to level out a tent platform in sand or gravel to focus your impact onto durable surfaces.

Before changing anything, mentally note the location and appearance of the natural setting. Then, before you leave, return everything as it was.

Avoid damaging live trees and plants. Never put nails in trees, hack at trees with hatchets or saws, or girdle thin-barked trees with tent lines. Cutting boughs for use as a sleeping pad creates minimal benefit and maximum impact.

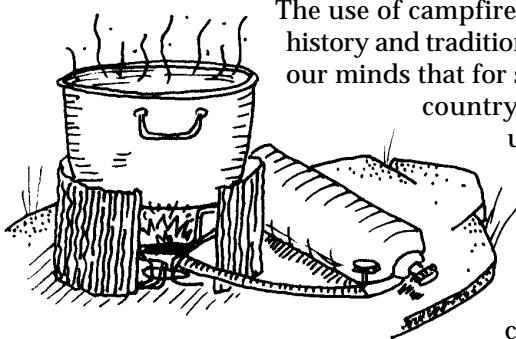
Picking flowers, leaves or edible plants may seem like a harmless act, but the cumulative effect of many people doing so may become quite damaging. Enjoy an occasional edible plant, but leave plenty for birds and animals. If you collect edibles, a good rule of thumb is to harvest only abundant species, and take no more than 10 percent from any one site. In popular locations, consider not picking any vegetation. Take pictures or make a sketch instead.

Leave natural objects and cultural artifacts. Natural objects of beauty or interest, such as antlers, bones, shells or petrified wood, should be left alone. In some areas it is illegal to remove any natural objects, including plants and flowers.

The same ethic applies to the discovery, disturbance or removal of cultural artifacts. Some sites or artifacts are sacred to native peoples. All these items contribute to our understanding of human and natural history, including the effects of disease, climate changes, and shifting animal populations on the land and people. In the U.S., artifacts and cultural sites are protected by the

Archaeological Resources Protection Act of 1979 and the National Historic Protection Act of 1966. This includes seemingly insignificant arrowheads, potsherds and remnants of historical structures. It is illegal to excavate, disturb or remove these resources from any public lands.

Minimize Use and Impact of Fires



The use of campfires in the backcountry is steeped in history and tradition. This tradition is so entrenched in our minds that for some, the idea of going on a backcountry trip without having a fire is unthinkable. But the natural appearance of many areas has been compromised by the careless use of fires and the demand for firewood.

The development of efficient camp stoves has facilitated a shift away from the traditional camp fire.

Because they are fast and eliminate the concern for firewood availability in campsite selection, stoves are now essential equipment for minimum-impact camping trips. Backcountry visitors should carry stoves and sufficient fuel to cook all their meals. If you typically depend on fires as a light source, consider using a lightweight candle lantern as an alternative.

The decision to build a fire should never be made arbitrarily. Regulations, ecological conditions, weather, skill and firewood availability all should be considered in deciding whether to build a fire. If you choose to build a fire, keep the following ideas in mind.

Be aware of regulations and weather conditions. In a temperate coastal zone, where rain is typically common, vegetation is thick and abundant. During dry spells, fire bans may be in effect to decrease forest fire danger. Hot, dry weather and wind are variables that may make having a fire in any environment inappropriate. Even during rain, an improperly constructed fire on the forest floor can spread underground and create a forest fire days, or even weeks, later.

Use only dead and downed wood to build a Leave No Trace fire. Breaking limbs from trees or other plants is damaging and detracts from the naturalness of an area. On the coast, the preferred source of firewood is driftwood, especially milled lumber. Not only is this source an unnatural component of the coastal environment, it also burns better than most other wood when wet. Avoid painted, laminated or creosote treated wood pieces because they emit toxic fumes when burned.

Milled wood of larger sizes can be used if cut with a small saw, then split with an ax, or hatchet. You should carefully gauge how much you will use. This will keep you from splitting too much and leaving signs of your visit. If you are traveling by boat, it may be possible to carry extra kindling you create. This dry supply of ready-to-use fuel can be especially beneficial in foul weather or on beaches without an adequate wood supply.

If there is not a supply of driftwood, collect loose sticks and branches from the ground. Never break branches off any trees, living or dead. Broken branches leave scars that visually impact the area.

Gather firewood away from camp so the immediate vicinity does not look unnaturally barren. Take time to walk at least five minutes away, and then gather the wood over a wide area.

Firewood the size of an adult's wrist breaks easily by hand, burns hot, and will burn completely, making cleanup easier. Do not burn large logs because they are difficult to burn down completely and charred wood detracts from the naturalness of an area. Keep wood in its natural lengths until ready to burn, then break it into burnable lengths as needed. If there is any unburned wood left when breaking camp, it can be re-scattered in the forest.

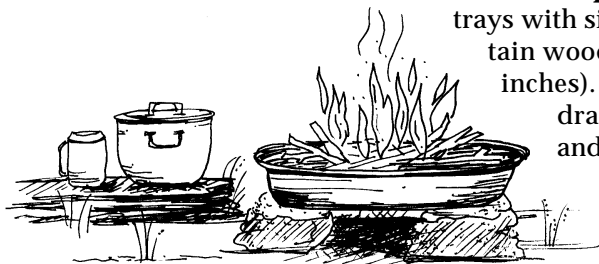
In high use areas, use existing fire rings. In established campsites in high-use areas, fires should be built in existing fire rings. Encourage others to use the same fire ring by leaving it clean. Remove any trash and burn all wood completely to ashes. If the fire ring is filling with ash, crush and scatter the charcoal over a large area away from camp. Consider carrying out a bag of charcoal with your trash if the area is popular. These practices help to avoid the proliferation of multiple fire rings.

In remote areas, use appropriate LNT fire techniques. In many remote or pristine areas, it is possible to enjoy a fire without leaving notable impacts. Techniques have evolved

and there are now practical minimum-impact alternatives to fire rings. Take care to select a durable fire site. The heat from fires can cause impact, but so too can the concentrated trampling caused by people cooking or socializing around the fire. Remember that in some backcountry areas fires are permitted only in designated fire sites.

Beach fires. If you are camping along a sand or gravel beach, the best fire site is below the next high tide line. Below the tide line, any traces of your presence will be swept away by the next incoming tide. Scoop a shallow pit in the sand or gravel and you are ready to build your fire. In some cases, when the beach is made up of larger stones that will scar, you can line the pit with an inch or two of sand or small gravel taken from another location. When you are finished with your pit, take care to obliterate any signs that there was a fire. Burn the wood down to white ash or very small coals. Doing so may require some extra time, but is a significant step toward minimizing the impact of the campfire. Placing small twigs on the coals and fanning or blowing will help to burn the coals down.

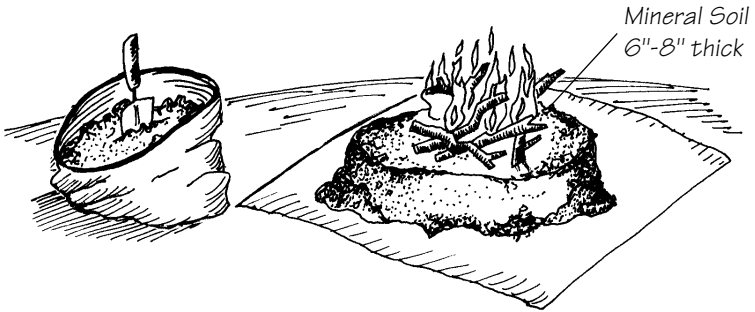
Portable fire pans. Fire pans are metal trays with sides high enough to contain wood and ashes (about three inches). Fry pans and metal oil drain pans make effective and inexpensive fire pans. A few outdoor companies are beginning to market lightweight versions. When using



a fire pan, elevate it on small rocks or line it with mineral soil so the heat does not sterilize the ground.

Mound fires. A platform or mound of mineral soil can be built as a fire pad and later easily dismantled. Mound fires can be built with simple tools: a garden trowel, a large stuff sack and a ground cloth. Locate a ready source of mineral soil (found below the topsoil), sand, or gravel. Mineral soil should be gathered from a spot that is already disturbed by natural forces and where the impact of digging and collecting the mineral soil will not damage live vegetation. Good sources for mineral soil include stream courses and the cavity left when a tree blows over.

Using the stuff sack, carry a load of mineral soil to the fire site. Lay a tarp or ground cloth on the fire site and spread the soil on top of it. Form a circular, flat-topped mound or platform about six to eight inches thick and 18 to 24 inches across. The ground cloth helps facilitate clean-up once the fire is out.



The thickness of the mound is critical for insulating the ground surface and tarp from the heat of the fire. The diameter of the mound should be larger than the size of the fire to allow for the inevitable spreading of coals. It will take more than one bag of mineral soil to make an adequate mound.

After the fire is completely out, widely scatter the cooled ash and coals away from camp and then return the mineral soil to its source.

The advantage of the mound fire is that it can be built on flat exposed bedrock or on an organic surface such as leaf litter without scarring the rock or damaging the soil.

Respect Wildlife

One of the great attractions of the coastal environment is the large variety and abundance of wildlife. As visitors to these areas, we must be aware of how our presence affects animals. While some animals may seem accustomed to people and unaffected by human presence, many animals can be greatly affected by a single human encounter.

Land mammals are often shy of people and their presence is not always obvious. Limit the amount of noise you make so you don't scare animals from their homes. Dig catholes away from animal burrows and trails. Don't habituate animals with food scraps or dirty kitchens. Allow wild animals to stay wild.

Bears may be present in many coastal areas. Leave No Trace practices strive to balance safety concerns in bear country with ecological and social impact concerns. This manual does not cover all information needed to travel and camp safely in bear country. Please seek specific information about the potential for bear encounters and preferred safety techniques from local land managers, at visitor centers, or on trailhead signs.

When traveling in bear country, whether black bears or grizzly bears are present, camp organization and cleanliness take on an increased significance. The primary concern is for safety, both for the visitor and 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.



Sea Otter

Marine mammals. Marine mammals are very vulnerable to human disturbances. Activities which disturb marine mammals may cause detrimental effects such as separation of mother whales and their calves, disruption of migratory patterns, disruption of social groupings, interference in breeding and reproductive activities, disruption of feeding activities and abandonment of nursing pups. Because of these potentially harsh impacts, all marine mammals are protected from human disturbance by federal law.

The Marine Mammal Protection Act of 1972 prohibits harassment of marine mammals. Harassment is defined as any activity that "has the potential to disturb a marine mammal in the wild by causing disruption of behavioral patterns including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering." Do not approach marine mammals on land or on the water. Use binoculars to observe animals from a distance. 100 yards is the legal minimum distance between you and a marine mammal, but even from there some animals may be disturbed by your presence. Back off if animals show signs of disturbance such as increased vocalizations or body movements.

Sometimes seals, sea lions and sea otters appear inquisitive and

will watch or follow a kayak in the water. In these situations it is fine to observe the animal from whatever distance it chooses to approach you. However, you should not approach it. To leave the area, paddle away from the animal even if you must detour from your intended travel direction.

Atlantic
Puffin



Sea birds. Sea birds are abundant residents of the coastal environment. It is important not to disturb the birds during nesting season because you may endanger the chicks or the eggs by scaring away the parents. With the parent birds gone, predatory birds may raid the nests.

Give rookeries a wide berth and observe with binoculars. Along beaches, avoid stepping on camouflaged nests. If you get close to a nest, parent birds may try to scare you away by dive-bombing you, making lots of noise or luring you away with some kind of "distraction display" such as feigning a broken wing. In these situations, leave the area carefully and promptly.

Intertidal life. Marine intertidal areas are home for lots of interesting animals. You can best explore these areas during low tides on rock outcroppings, in pools and along beaches. Although these animals tend to be hardy, many can be destroyed by a single careless footstep. Be careful to avoid stepping on mussels, barnacles, urchins and sea stars. Some animals are vulnerable to drying out if moved out of the water for extended periods. Others may be harmed by careless handling. Be considerate of these little creatures that can be easily overlooked. If you move one for a closer look, be sure to return it to its original location.

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