LEAVE NO TRACE

SKILLS & ETHICS

People enjoy the outdoors in more ways than ever before. We explore on foot, kayak, handcycles, horseback, mountain bikes, off-road vehicles, and power wheelchairs, skis, snowshoes, and crampons, to name a few, and there are more of us pushing outdoor recreation endeavors to greater extremes and into more remote parts of the natural world every day. There are also more people than ever before enjoying the outdoors close to home – an afternoon picnic in a neighborhood park, a quick walk after work on a local trail, a family gathering for an evening cookout, or just lying in the grass watching the clouds drift by. These experiences are personally satisfying, providing both mental and physical health benefits. The outdoors offers a restorative power that few other things in life can. However, each time we venture outside, we have a choice to make – we can think only about ourselves or we can choose to respect all people, regardless of how they choose to enjoy the outdoors, and we can all choose to enjoy the outdoors responsibly by minimizing our impacts.

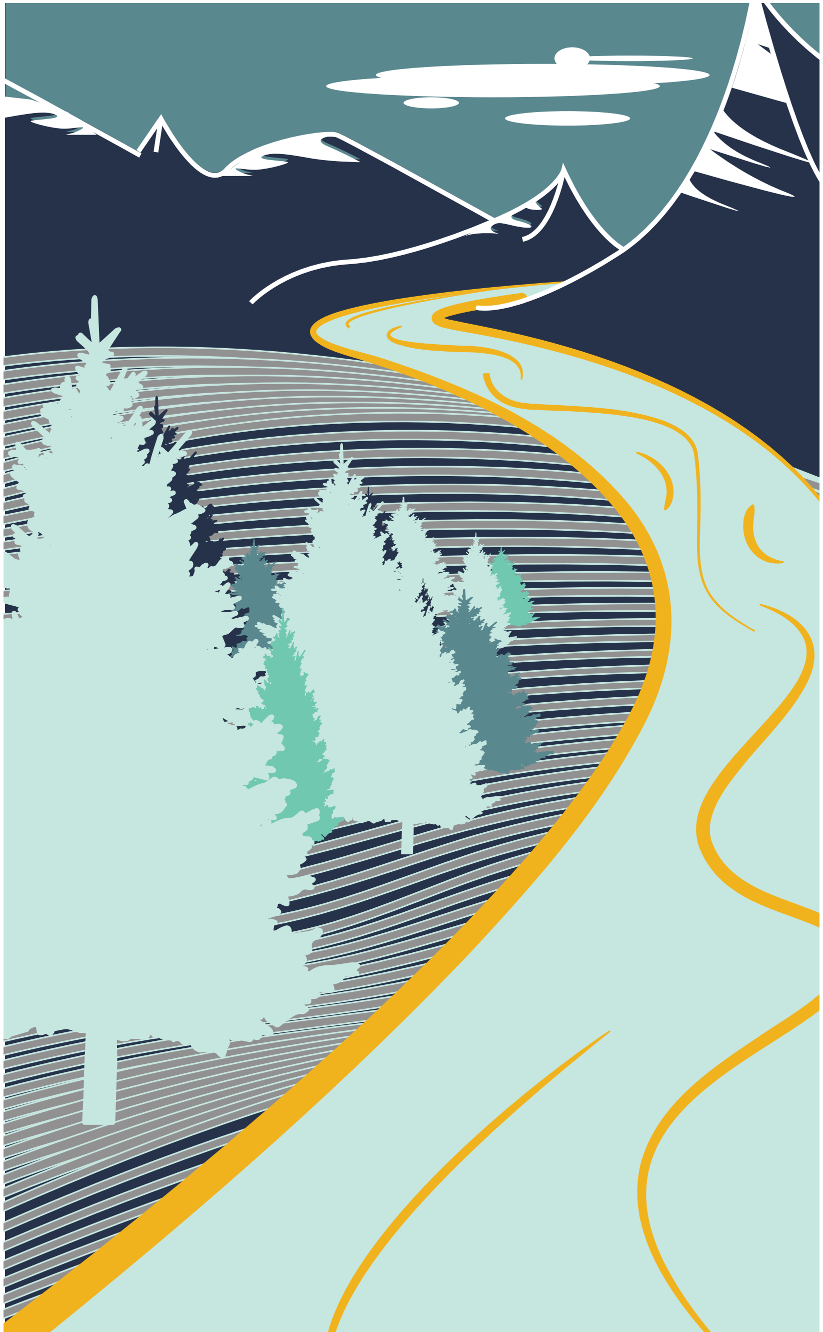
America's vast outdoor spaces are diverse and beautiful. They can also be fragile. Polluted waters, displaced wildlife, eroded soils, trampled vegetation, theft, vandalism of cultural resources, and conflict with others are just some of the impacts linked directly to outdoor recreation. Much of the impact that results from recreation comes from simply being uninformed, unskilled, or careless. Given that there are more and more of us trying to enjoy the same finite spaces, the best way to minimize our impacts when spending time outside is by learning about and putting Leave No Trace into action.

The goal of Leave No Trace is to minimize the unavoidable impacts of recreation and to eliminate those impacts that we can avoid altogether. Leave No Trace is not about perfection, it's about awareness and action. It's about doing what we each can do to minimize our own individual and cumulative impact. Doing one thing to minimize the impact of your outdoor recreation is better than doing nothing at all. Think about it — if every person who went into the outdoors did only one thing to reduce their impact, the benefit to our shared lands would be incredible! Then, if each person began to do more things to minimize the impacts, we could realize a sustainable future for all the outdoor spaces we share.

This booklet is part of a national educational program called Leave No Trace which aims to be the solution, the framework for a sustainable and responsible recreation future for all. At the heart of Leave No Trace are Seven Principles for reducing the damage caused by outdoor activities. 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 promote respect and inclusion to all who spend time outdoors and to the natural world of which we are all a part. The Principles are based in science, and built on a foundation of a shared respect for nature and each other. This respect, coupled with good judgment and awareness, will allow everyone to put the Principles into action on any outing.

Note: *Included in this publication is a 'terms defined' section. If a term in this publication is unfamiliar to you, please refer to this section for information.*



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OUTDOOR SKILLS & 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.

For more information, visit www.LNT.org or call 800-332-4100.

THE SEVEN PRINCIPLES OF LEAVE NO TRACE

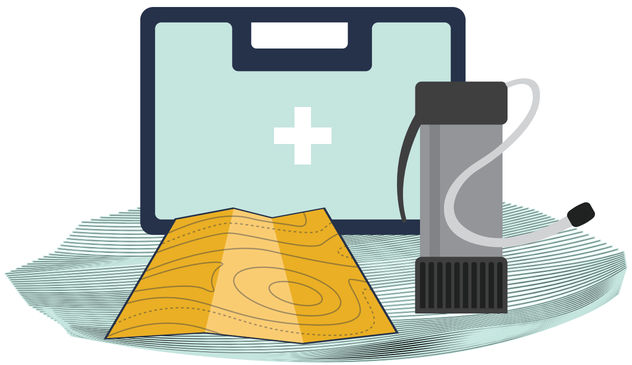
PLAN AHEAD & PREPARE

Plan ahead by considering your intentions and skill level and those of your group. Prepare by gathering information, considering and communicating expectations, and packing the items needed to have a safe and enjoyable trip.

Build Leave No Trace into your plans by picking an appropriate destination for your group, and allowing plenty of time for safe travel there and back. Allow extra time if you plan to set up camp and stay overnight. Be prepared to turn back if conditions change or risks increase. Always carry first aid equipment with you in case of injury, and have a means of communication with you in case you need to call for help. Remember that many places may not have reliable cell phone reception, so have an alternate communications plan in place. Before you leave on your trip, always let someone know where you're going and when you plan to be back.

Do some research. Start with an internet search or call the location you plan on visiting to find out if there are any special concerns or regulations for the area you plan to visit. Every area is unique; some might have bathroom facilities while others may not, some may require a permit for certain areas, and so on. The more information you can find out before arriving, the more likely you are to be able to minimize your impacts (e.g., water resource impacts, wildlife impacts, trash, campfire impacts, etc.) in the area. Check the weather both leading up to your trip and right before heading out to have the most up-to-date forecast. Also consider learning about the history of the places you plan to visit, including the stories of any Indigenous Peoples and Nations in the area. The more you know about an area's history, the richer your experience may be and the better prepared you will be to respect local and native communities.

Land management agency websites, offices, and visitor 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 accessed or contacted online. They may also have official social media channels that provide the necessary information. For permits and reservations, a great resource to start with is www.Recreation.gov.

Plan for your group. While researching locations, consider which places might be best suited for your group's skill level, health, ability, interest, and recreation goals. For example, are you looking for sweeping views, a picnic area, a long hike, or something shorter, somewhere you hope to be mostly alone or places where you'd prefer to be around others? Also, consider and research transit options to the places you'd like to visit. Planning will go a long way towards ensuring both a safe and fun outing regardless of how you choose to spend time outside.

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 planning. Always consider the ultimate goal of any outing. For some types of recreation, smaller groups may be desired. However, large groups also have their place in the outdoors and can offer greater opportunities for connection. Informing everyone in the group, regardless of group size, about Leave No Trace before heading out can go a long way towards minimizing impacts. If you are planning for a large group, it's best to inquire about potential group size limitations in advance. Large groups may be best accommodated in places where there are likely to be amenities such as restrooms, designated campsites, existing trails, and picnic areas.

Consider avoiding times or locations with high use. Visits to popular or heavily used areas during peak use seasons or periods, including holidays and weekends, can often be met with heavy traffic, crowding, delays, and potential

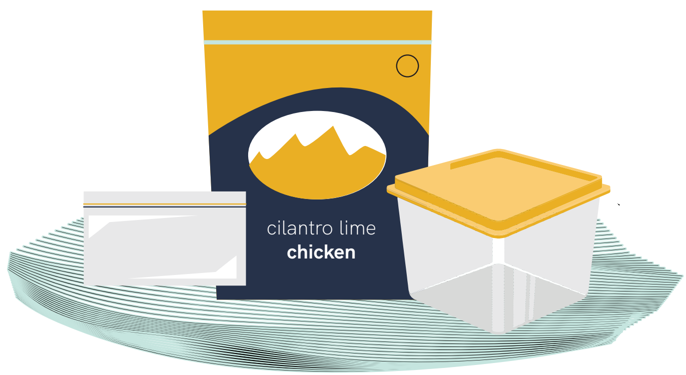
conflicts with other groups. Visiting at other times, such as midweek or during the off-season, may provide for a less crowded experience and to help minimize concentrated impacts on the area. You may also wish to consider a less popular destination as a means of seeking more desirable conditions, although bear in mind that “less popular” alternate locations may require a different skill set and/or be managed for a more primitive, self-reliant recreational experience and have a more limited capacity for emergency response. When necessary, make reservations and obtain required permits well ahead of time to ensure access.

Consider seasonal, environmental conditions. Avoid recreation when environmental or seasonal conditions, such as muddy trails, saturated soils, or uncleared trails make recreation impacts more likely. Such avoidable impacts are often costly to address, diverting financial and human resources from other pressing issues faced by parks and protected areas. Public safety risks may also be more severe at times of the year when the snowpack or stream and river levels make access and travel more difficult and hazardous.

Use appropriate gear. Prepare for extreme weather, hazards, and emergencies. Pack the gear necessary to have a safe and enjoyable outing. For example, if camping overnight, a camp stove and fuel, cookware, and matches may be necessary for meals. Carry a good map of the area, plenty of food, a first aid kit, water, a water filter or purification tablets, warm clothing, and protection from the sun, rain, cold, and insects. It’s important to bring the gear necessary to pack out trash and deal with our human waste. A trash bag for packing out litter and a trowel for burying human waste can both ensure we leave the least impact possible. Some outdoor gear can be borrowed from a friend, found in many stores, or may be available for rent or loan at outdoor equipment stores or community organizations. (Sample equipment lists at the end of this publication)

Prime examples of equipment that keeps us safe can also reduce impacts on our surroundings include a camp stove, which provides a quick meal while significantly reducing the risk of starting a wildfire, or an approved animal-resistant food container (e.g., “bear canister”). On muddy trails—where we might want to step on trailside vegetation to keep our feet dry—gaiters or weatherproof boots let us go through puddles or wet stretches of trail without getting wet. Keep in mind that sometimes conditions may make damage unavoidable so finding an alternative (such as a paved trail) or staying home until conditions improve may be the least impactful choices.

Plan your meals. To decrease the amount of trash produced on a trip, plan meals ahead of time to avoid leftovers. Package food in reusable containers or plastic bags. Get rid of wrappers and heavy packaging in advance, so you won’t have to carry them with you until the next trash can, or be tempted to leave trash behind. By reducing the amount of trash we have in the first place, the risk of accidental litter is also decreased.



Develop the skills. Research and use the skills and types of gear that are needed for your chosen activity. Watch online videos, learn from an experienced friend or mentor, take a course, find a community organization, or search for a guided option. Make sure that first aid, navigation, and self-reliance are part of your skillset, and be sure the terrain, distance, difficulty, and other trip factors match you and your group's abilities and personal goals. Leave No Trace practices vary geographically. In the desert southwest, for example, it's important to know what living soil crusts look like. In the Appalachian Mountains, knowing how to keep your food and trash safe from black bears is critical. Learn as much as you can about your destination and how to have fun there while staying safe and protecting the land.

Take responsibility. Take responsibility for your own safety by practicing self-awareness, caution, and good judgment. Getting lost or seriously injured has important implications for you, your group, the people who attempt to find you, and the land. Significant impacts on the landscape can result from rescue operations that involve vehicles or large numbers of people. Minimize risk by planning a trip that matches you and your group's skills and expectations. Be prepared to rescue yourself from tough situations. Remember, the further away from help you are, the more prepared you'll need to be.

For safety, obtain a permit when required or register at the trailhead or with a ranger whenever available. Always carry a map and compass and know how to use them, keeping in mind the safest way to get out. If you choose to carry a GPS in addition to a map, be sure to know how to use it and carry extra batteries. Stay with your group. Just in case, give another person your itinerary and instructions explaining what to do if you don't return on schedule. Don't stack or deface rocks or trees to mark your way. The use of flagging tape should also be avoided to mark your way.

THE SEVEN PRINCIPLES OF LEAVE NO TRACE

TRAVEL & CAMP ON DURABLE SURFACES

Recognize durable surfaces. What effect does a footstep, tire tread, snowshoe, or horse hoof have? The answer is, it depends. These things mean different things to a tree sapling and meadow grass, to leaf litter and muddy soil, to a gravely riverbank and rainforest moss, to a sidewalk and a picnic area.

Unfortunately, repeated use can cause 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 the northern Rockies. Other impacts are also possible. Most soils contain animals that live or feed on decaying plants. Trampling destroys the 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, trails, sidewalks, snow, or water.

Concentrate use in popular areas. In popular or high-use areas, it leaves the least impact if you stick to maintained and designated trails, established or officially designated 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. Some animals may learn to expect people on trails, meaning they may be less disturbed by encounters with people on-trail than off the trail.

Stay on designated trails. On single-track trails, travel single file in the center of the trail—even where and when it's wet, rocky, or muddy. Trails become progressively wider and form parallel paths where people travel on the edge or detour around obstacles. Likewise, undesignated trails leave lasting impacts on campgrounds and other popular areas. Use established roads and trails. Shortcutting a trail, especially on switchbacks, has severe consequences. Shortcuts become trails or gullies that require costly restoration, often by volunteers. Follow recommendations to avoid areas where efforts to restore vegetation and soils are in progress.

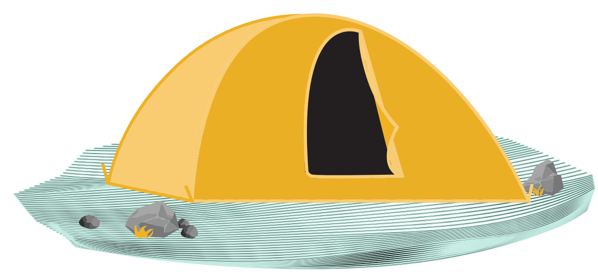
Boating, fishing, paddle boarding, kayaking, snorkeling, diving, and other water-based activities can damage shorelines, wetlands, and reefs. Inquire locally about how to minimize your impact on these important, and often fragile, resources. Always choose durable sites to launch, anchor, and dock your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

Use established campsites. Choose a well-established campsite that's big enough for your group. Most popular areas have officially designated campsites, shelters, or tent platforms. The 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. Concentrate your activities in the center of the site to

avoid enlarging it. Always try to choose a site that is large enough to accommodate your group.

In bear country, separating the sleeping, cooking, and food storage areas is standard practice and often required. Though separated, tents, packs, gear, and the kitchen area should be concentrated on previously compacted, naturally resistant, or reinforced surfaces. This approach protects surrounding vegetation and prevents the development of "satellite" sites.

In some areas, visitors seek opportunities for solitude. In such areas, consider your visual impact on other users and wildlife. Take advantage of opportunities to tuck your tent out of view behind natural screenings such as trees or rocks.



Good campsites are found, not made. What makes the perfect campsite? The answer is different for different people. For some, a largely developed campsite with numerous amenities may be perfect. For others, a small remote campsite in the backcountry is preferred. For most, safety and comfort are key, yet securing such amenities should not entail a major remodeling effort. We can bring our own camp furniture, as well as other conveniences along to eliminate the need to create them on-site. Camp stoves, inflatable mattresses, tables, chairs, lanterns, dishwashing tubs—even solar showers—

are readily available and they pack in and out with ease. These items can be borrowed from a friend, found in many stores, or may be available for rent at outdoor equipment stores or community organizations.

When done with your visit, leave your campsite clean and natural looking. Naturalize it by returning any rocks, sticks, branches, or leaves that may have been removed. If possible, leave campsites better than you found them by packing out any trash left behind by others. In the outdoors, we can be many things — visitors, locals, tourists, indigenous peoples, or just those who are traveling through — 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, fire rings filled with trash, and the like are avoidable. By taking the time to pick up after ourselves, and others, if necessary, we'll all benefit.

Trees are often unnecessarily damaged near campsites. Take care not to break off branches while securing tents

or clotheslines, and when suspending food or game carcasses. Don't use wire or nails as this can cause lasting damage to trees. Place a stuff sack or other material under straps or ropes or where padding is necessary to protect the bark. Likewise, hang gas lanterns where they won't singe bark, or consider the use of a battery-operated lantern. When traveling with stock such as horses or mules, 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 opens the tree to disease and creates an ugly scar. Sustainable firewood collection is discussed under Minimize Campfire Impacts.

Disperse use off-trail in pristine areas. An ever-increasing number of undesignated trails and campsites has challenged land managers across North America. In many parks and protected areas, visitation is increasing every year. While this increased visitation is good in that more people are enjoying the outdoors, it can lead to more impacts on our shared natural spaces if we don't put Leave No Trace into action. For those looking for a backcountry or wilderness experience, a commitment to Leave No Trace is critical as these areas tend to be extra sensitive to impact. Using established routes, trails, and campsites is always preferable to creating new ones.

If you choose to travel off-trail, use the most durable surfaces such as rock, snow and ice, gravel, sand, and navigable water. Dry grasses and similar grass-like plants are also naturally durable due to their hardy root structures and flexible stems.

Where erosion is occurring, rare species are present, or vegetation grows slowly such as in alpine environments above the tree line, stick to existing trails. 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 ensure that you're aware of any special recommendations, considerations, or rules. In general, spread out when hiking across vegetation. If each person takes a slightly different route, a distinct trail is far less likely to form because no single plant receives a repeated impact. Traveling single file is acceptable where there is little chance of trampling plants.

Off-trail travel may be overly damaging to plants in some areas. For example, golden mountain heather grows on a few rocky ledges in the Pisgah National Forest in North Carolina, and nowhere else on earth. Off-trail hikers and climbers are the only serious threats to its survival. Similarly, living biological soil crust found in southeastern Utah can be severely damaged when stepped on and can take years if not decades to recover. If you must travel through fragile terrain, choose the route in the least destructive locations and encourage your companions to travel in exactly the same spots.

Campsites. Select the most durable camping location possible. In pristine areas, camping spots that are lightly used should be left alone to recover, and a site that has no signs of use should be chosen. Before unpacking your tent, look for obvious bird nesting activity or other signs of animals. Choose an area that seems safe (i.e., not near dead-standing trees), free of wildlife, and well suited to low-impact camping. Look for a large rock slab, a graveled area, dry grasses, or other equally durable space to locate your kitchen since it will receive the most impact. Concentrate your activities in this space whenever possible to protect more fragile areas. If necessary, reserve less durable ground for your sleeping area.

In areas with little use, 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 undesignated 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, mosses, 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 area less obvious as a campsite. Ideally, no undesignated trails or campsites will be created if visitors disperse their activities.

Protect water resources. Sand and gravel bars along large rivers and rocky or sandy lake or ocean shorelines are durable surfaces that may be suitable for low-impact camping. However, vegetated lakeshores, ocean sand dunes, and the banks of small streams are often fragile and easily eroded. Plants and animals also congregate at these water sources, so camp at least 200 feet (70 adult steps) away from any water sources unless local guidelines indicate otherwise. In dry regions such as the desert Southwest, this practice gives wildlife vital access to potholes and springs. By distancing camps from water, we are less likely to inadvertently pollute them with either human waste or gray water.

Sometimes designated campsites or shelters can be too close to trails or water because of terrain limitations or a long history of use. In these instances, continued use of such sites is preferable to the creation of new ones. Just be extra careful to protect nearby water sources in such cases.

THE SEVEN PRINCIPLES OF LEAVE NO TRACE

DISPOSE OF WASTE PROPERLY

Pack It In, Pack It Out. "Pack it in, pack it out" is a familiar saying in the outdoor setting, meaning anything you pack in with you, you will also need to pack out with you. Anyone who spends time outdoors has a responsibility to clean up before leaving. Check your campsite, picnic areas, or rest areas used along a trail for trash or spilled foods. Pack out all trash and garbage including food waste, leftover food, crumbs, wrappers, etc.

Plan meals to avoid generating messy, smelly garbage that might attract wildlife or be difficult to clean up or pack out. It is critical to protecting wildlife that we pack out all food waste, even our crumbs. Fires are not an appropriate way to dispose of trash or leftover food. Most trash doesn't burn completely and/or can produce toxic fumes. Burned trash also attracts wildlife, is unsightly, and may encourage others to burn their trash as well.

Overlooked trash is litter, and litter is not only ugly—it can also be deadly. Plastic bags and other trash can harm or kill many animals including deer, bears, chipmunks, birds, and marine wildlife. Fishing lines, lures, and nets ensnare and injure everything from dogs to herons, so don't leave any behind.

Carry plastic or reusable bags or animal-resistant containers to store and haul your trash (and maybe someone else's). Before moving on from a camp or resting place, search the area for "micro-trash" such as bits of food and small trash, including cigarette filters, the corners of packages, and organic litter like orange peels, coffee grounds, or pistachio shells. Invite those in your group to make a game out of scavenging for any items that should be packed out.

Human waste. Proper disposal of human waste is critical for ecological reasons and has social implications as well.

The four objectives of proper human waste disposal are:

- Minimize the chances of polluting water sources
- Minimize the spread of disease
- Minimize the chances of social impacts
- Maximize decomposition

Improper disposal of human waste can lead to water pollution, the spread of illnesses such as Giardia and Hepatitis A, and unpleasant experiences for those who follow. Wherever soils are thin or sparse, such as the arctic tundra, above treeline, or in desert environments, rainstorms can flush human waste directly into water sources. Water contamination has occurred in some parks and protected areas due to improper disposal of human waste. As such, it is critical that we properly deal with our human waste in the outdoors.

Human waste disposal methods

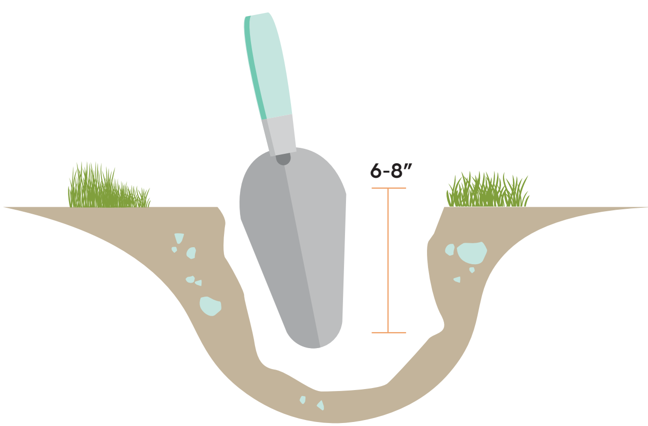
Facilities/ outhouses. Take time to locate and use bathrooms, outhouses, pit toilets, and other developed sites for human waste disposal.

Urine. Urinate 200 feet away from water sources, campsites, and trails. Recent research has shown that common pharmaceuticals such as allergy medications can be carried in our urine, which can end up in water sources causing avoidable pollution. Keeping urine out of water sources is critical. In some environments, urine may attract wildlife with salt-deficient diets. Animals sometimes chew on or consume plants or lick or dig up soils to obtain the salt in urine. When possible, urinate on rocks, sand, gravel, or bare ground rather than on vegetation. Where water is plentiful, consider diluting the urine by rinsing the site.

Human feces. If no restroom facilities are available, deposit solid human waste in a "cathole," which is a small hole dug 6 to 8 inches deep, and at least 200 feet (or about 70 big adult steps) from water, camp, trails, and drainages. It is best to bring a small, lightweight trowel or small gardening shovel to dig the hole, then fill it with the original dirt, and disguise it well after use with natural materials (e.g. small sticks, pine needles, leaves, etc.). If you don't have a trowel, a stick or rock can be used to dig a cathole but using a trowel is the easiest method. The microbes in the soil will break down feces and the pathogens they contain. In desert environments where soils are thin and sometimes lack microbes, shallower catholes from 4 to 6 inches are generally recommended. In these areas, it is best to pack out used toilet paper whenever possible. Don't leave human waste or toilet paper under rocks because it will decompose slowly there. Human waste disposed of in this way may also allow it to wash into water sources or allow animals or insects to come into contact with the waste which can lead to the spread of disease. If the cathole method is ill-suited to your group (e.g. young children, large groups, etc.), visit or camp in areas where a restroom, an outhouse, or pit toilet is available, or consider the use of human waste pack-out products that are now widely available.

Good cathole sites isolate waste from water sources such as lakes, streams, dry creek beds, ravines, bogs, and potholes, and away from other visitors. Select a discrete site and use a remote location during the day's travel to help prevent high concentrations of catholes near campsites. If you find yourself needing to use the bathroom and you don't have time to dig a cathole, simply find a good cathole location, deposit the waste on the ground, dig a cathole next to the waste, and use a stick to move the waste into the cathole. Disguise the cathole well after use with natural materials.

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 has caused many costly and damaging wildfires, rarely burns completely, and is never recommended. "Natural" toilet paper like grass, sticks, and snow can be surprisingly



effective. Always pack out menstrual products such as pads and tampons because they decompose very slowly and may attract animals. Waste from menstrual cups can be disposed of in a cathole 200 feet from water and 6 to 8 inches deep.

Latrines. When traveling with children, larger groups, individuals who may not be able to use, or lack the necessary skills to properly sit and dig a cathole, it might be best to dig a latrine. Site the latrine as you would a cathole and make sure that the route to the latrine is over durable surfaces. Dig a trench 6 to 8 inches deep, and long enough to accommodate the needs of your party that is a minimum of 200 feet from water sources, campsites, and trails. 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 or "disguise "the site well before leaving.

Carrying waste out. Recreation managers trying to protect human health and water sources use a variety of toilet designs and approaches to managing human waste—even airlifting waste out with helicopters. In many locations, such options are costly to maintain and require significant labor. To minimize such hardships, one option is to carry and use a commercial product such as a "WAG" (waste, alleviation, and gelling) bag designed for packing out human waste. Dispose of the contents according to package instructions. Local land managers may recommend other appropriate disposal techniques so be sure to check local rules and regulations for the proper disposal of human waste bags. Another option for packing out human waste is a washable, reusable toilet. While not an ideal option for a backpacking trip, such toilets are well suited for pack stock or rafting trips, or areas with vehicle access but no toilet facilities.

Sanitation. Good sanitation after going to the bathroom outside includes using hand sanitizer or washing your hands before handling other gear or food. Those who regularly spend time in the backcountry or on extended trips may find it helpful to make and bring a personal "poop kit" or "personal sanitation kit" including zip-top bags, a small trowel, toilet paper, hand sanitizer, plus bandanna and menstrual products, if applicable.

Special Environments

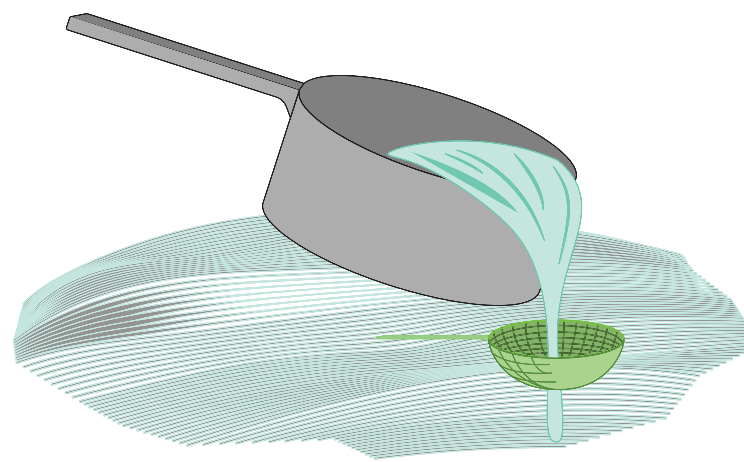
Winter. Winter conditions present special challenges. In some winter environments where snow is common, water is everywhere—it just happens to be frozen—and the soil may be several feet out of reach and as hard as a rock. Pack-out products such as WAG bags may be the best disposal option unless you can locate a patch of bare ground, usually under a tree where a trowel might penetrate the soil. Otherwise, if you must dig a "snow" cathole, be sure to look at your map to determine if the location you choose is on or near a water source. Once the snow melts human waste deposited in such locations could cause problems. Slopes or ridges may be the best choice for a cathole in the snow to help minimize the spread of disease.

Waterways. Carrying a portable toilet for solid waste 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. Proper disposal of urine along waterways varies greatly from one area to the next. Be sure to check local recommendations and rules regarding the proper disposal of urine where you plan to go.

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 dishwashing, use a clean pot or expanding jug or bucket 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, scrub with a dish sponge, and little or no soap if possible. Strain dirty dishwater with a fine mesh strainer, a bandana, or even a zipper-lock bag with a few small holes poked in it before scattering it broadly, (also known as "broadcasting"). Do this well away (200 feet or more) from camp, especially if bears are a concern. Pack out anything you strained from the water in a plastic bag along with any uneaten leftovers and other trash. Another option in environments with bears (black or grizzly) is to dig a 6- to 8-inch-deep hole in which you can pour strained dishwater. Cover the hole up with the dirt you removed when digging it. Animals should not be allowed access to any human food and food waste for reasons discussed in the "Respect Wildlife" section.



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

Soaps, lotions, and toothpaste. Soap and toothpaste, even when biodegradable, can affect the water quality of lakes, streams, and springs, so minimize their use. Always wash yourself and brush your teeth 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, avoid swimming in creeks or potholes. Lotion, sunscreen, insect repellent, and body oils contaminate these vital water sources. If you do choose to swim, rinse off with water 200 feet from the source to minimize the potential contaminants you could introduce to the water from swimming.

Dispose of fish and game entrails. Dispose of the remains of fish and other game harvested through fishing or hunting well away from trails, water sources, and campsites. In some situations, it may be appropriate to bury, scatter, or pack out the remains with the garbage. Properly dealing with fish and game remains in bear habitat is critical. Official guidelines and recommendations vary considerably from place to place, so do research online and/or call ahead for specifics. State fish and game agencies can provide information for proper disposal.

THE SEVEN PRINCIPLES OF LEAVE NO TRACE

LEAVE WHAT YOU FIND

People visit outdoor spaces for many reasons, among them to experience natural and cultural mysteries and surprises. When we leave rocks, shells, plants, antlers, feathers, fossils, artifacts from Indigenous peoples and ancient cultures, and other objects of interest as we find them, we pass the excitement of discovery onto those who follow.

When natural, historic, or cultural treasures are missing from our favorite outdoor spaces, a part of the story is left untold, and cultural or spiritual connections may be disturbed or lost. Leave What You Find means retaining the special qualities of every natural area—for the long term.

Preserve the past. Humans have been a part of the natural landscape for thousands and thousands of years. Finding objects from past and current inhabitants such as clay pots, rock art, projectile points, scraping tools, and antique glass can be exciting, and it may be tempting to take such things home. As visitors, it is important to remember that these items do not belong to you and should not be taken as souvenirs. Many Indigenous peoples hold these items sacred, and we all should honor and respect that connection by leaving cultural objects where they are.

Archeological and historical artifacts help tell the story of the rich human history of the landscape. Historic 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 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 land. Observe but do not touch or disturb them. Instead, take a photo to save the memory. Use your best judgment before sharing the locations of historical or cultural treasures to ensure long-term preservation.

Leave natural features as you find them. Instead of taking natural features such as flowers, antlers, bones, seashells, feathers, branches, rocks, and leaves, consider other ways that you can capture your experience. Take photos, or paint or draw a picture to share and reflect on your experience. Let photos, drawings, and memories comprise your souvenirs. Shells, rocks, and plants are all a part of the natural world and play an important role in ecosystem functioning.

Help others investigate and learn about the role of seashells, flowers, pine cones, 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; 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.

While common in some places, rock stacking should be avoided unless it is specifically allowed. Though it may seem harmless, stacking rocks can create both ecological and social impacts. When rocks are gathered for stacking, erosion can occur when soils are loosened, and microhabitats that provide cover and safety for small animals and insects can be disturbed or destroyed. Traveling off-trail to gather rocks can lead to the creation of undesignated trails as well. Lastly, in some locations where stacked rock cairns are used for marking designated routes, rocks stacked by visitors can be confusing or lead to trail users getting lost.

Foraging and collecting. Traditional gathering by Indigenous communities takes place on many public lands and is a tradition that should be respected. Such gathering is done for many reasons –

religious, cultural, or ceremonial – and offers a window into the deep connection many communities have to the land. Respect native and local communities and their relationship to the land. Although natural objects may be collected on some public lands, a permit is often required. Except for enrolled members in federally recognized tribes with collection permits, collecting and foraging are prohibited in national parks and wildlife refuges.

Some parks and protected areas allow visitors to collect certain items or plants. For example, visitors to some national forests are allowed to collect berries for personal use. However, there are limits to the amount that can be collected, and in some cases, a permit is required. Always check with the land manager to inquire if the collection of natural objects or items is allowed.

Federal law applies to many parks and protected areas as well. For example, the federal Migratory Bird Treaty Act protects the nests and feathers of certain wild birds. Practice and encourage restraint.

Avoid spreading invasive plants and animals. Invasive species are plants, animals, or pathogens that are not natural to the ecosystem under consideration, and whose introduction causes or is likely to cause harm. Invasive species of plants, animals, and organisms can cause large-scale, irreversible changes to ecosystems by eliminating endemic species over time. According to the U.S. Fish and Wildlife Service, invasive species have contributed to the decline of 42 percent of the country's threatened and endangered species. Invasive plants affect every habitat type found in national forests and the Bureau of Land Management lands in the U.S. There is no effective treatment for many invasive species and they are impacting the living, natural heritage protected lands we were intended to conserve.

People and pets play a role in the spread of invasive

species 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 people travel from one ecosystem to another around the globe. On campsites in the Bob Marshall Wilderness in Montana, for example, three of the four most common species found are introduced plants.

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

- Don't transport flowers, weeds, or aquatic plants.
- Empty and clean your packs, tents, boats, fishing equipment, and other gear after every trip. Water, mud, and soil on gear may contain seeds, spores, or tiny plants and animals.
- Clean the dirt, vegetation, and seeds out of your shoes, boots, or tire treads.

- Never discard or release live bait into a water source where it is not endemic.
- Make sure pack stock and pets are properly 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 and saddle stock food that is certified weed-free for at least three days before entering parks and protected areas where required.

- Don't bring firewood from home. Either buy it from a local source or gather it responsibly where allowed.
- Help landowners or land managing agencies initiate control efforts by alerting them to affected areas.

THE SEVEN PRINCIPLES OF LEAVE NO TRACE

MINIMIZE CAMPFIRE IMPACTS

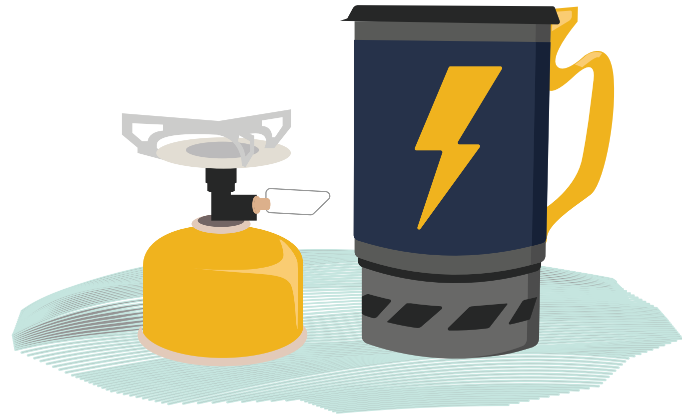
The natural appearance of many recreation areas has been significantly altered by the use of fires and the demand for firewood. Enormous fire rings of soot-scarred rocks—overflowing with ashes, partly burned logs, and food and trash—have become a common sight. Not only are these types of rings an eyesore, they can also harm wildlife. Additionally, campfires can and do ignite wildfires that are destructive to both the natural world and to people and communities who are affected by them.

Although campfires can be beautiful and are considered by many as part of the camping experience, they are not always essential to comfort, light, and food preparation. Many lasting impacts associated with campfires can be avoided by using a candle, a solar or battery-powered lantern, a lightweight stove, a fire pan, a mound fire, and other Leave No Trace campfire techniques. If you choose to have a campfire, do so in a responsible way that ensures you can minimize the impacts and eliminate the chances of wildfire. Better yet, forget having a campfire and enjoy the night sky.

Fires in the frontcountry. Some frontcountry campgrounds and day-use areas allow and encourage visitors to enjoy campfires as a leisure activity or source of heat for cooking. It is commonplace to find metal grills or grates in designated picnic areas. Much like established campgrounds with designated campsites, these metal grills and grates offer a safe and durable place to cook food. However, the threat of sparks or coals being blown into dry vegetation still present a danger that can be minimized with some simple preparation:

- Check park and protected area websites and sign kiosks for the most up-to-date regulations about the use of fire, and fire danger warnings or restrictions in these areas.
- Be mindful of the weather—a windy or blustery day may present some dangerous conditions. Not all metal grills or grates can be rotated to prevent coals from being caught by the wind. Have a backup plan if you are relying on the grill or grate to cook your food.
- Have enough water to completely put out the fire when you leave the area or are finished cooking. Fires should be doused completely with water and should be cool to the touch before ever leaving a fire.
- Lightweight campfires that run on propane can be an excellent way to enjoy a campfire with minimal impact. These are especially useful for car camping situations.
- Consider bringing a portable stove instead of cooking over an open flame. Portable stoves are often more efficient at cooking food and safer to use in conditions that would otherwise be unsafe for open flames.
- Consider bringing food that does not require cooking, which would eliminate any campfire-related impacts.

Portable grills are also a common item in frontcountry settings. For some, the use of a small, sometimes low-to-the-ground grill offers portability and functionality. To minimize fire impacts, be sure to check park rules and regulations. Be sure that the grill is placed on a surface—like gravel or a concrete picnic table—that can tolerate



extreme heat. Placing these types of grills over vegetation could lead to a wildfire event very quickly.

With all types of recreation where a flame is used to cook food, be sure to keep any group activities or games far away from the kitchen so that no one becomes injured and a fire does not accidentally spread.

Fires in the backcountry — use a stove. Visitors are encouraged to carry a stove, cooking pot or pan, matches or lighter and sufficient fuel to cook all meals. Build fires only when conditions are right—the danger of wildfire is low, downed, and dead wood no larger than your wrist 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 but will never regrow in our lifetime.

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 rangers or campground hosts 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.
- Be sure to have enough water available so that you can completely saturate the fire. Stir the "soupy" mixture and add more water to ensure that all the coals are out cold.

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 and/or half-burned wood and trash. 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.

Pan Fires. Fire pans are metal 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 a cord for transport.

Mound Fires. Mound fires are built on pedestals of sand, gravel, or on soil with low organic content. A good place to find such soil is in a creek or riverbed or from the root ball of a fallen tree. Try to disturb as little vegetation as possible when collecting this material. Haul it to a durable fire site using a stuff sack turned inside out to keep the inside clean (it may require several loads depending on the size of your stuff sack). Build a pedestal of soil 8-10 inches thick and 18-24 inches in diameter on top of a tarp or ground cloth. The tarp or cloth helps facilitate cleanup. The cloth can be rolled up under the edge of the mound to prevent it from being singed by embers. 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.

Use dead and downed wood. Keep fires small. Snapping branches off of trees, either living or dead, should be avoided because this scars them. For example, research from the Great Smoky Mountains National Park found nearly 1200 trees damaged by people collecting firewood in the 240 campsites that were studied. Purchase firewood locally, or if gathering firewood, 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 an unpleasant sight for the next campsite visitor. The use of hatchets, axes, or saws isn't necessary and should be avoided. While such tools play an important role in conservation work, they're simply not needed to enjoy a safe and responsible campfire. Where allowed, gather firewood either far away from or en route to your

camp so the area around your site retains a healthy supply of wood and maintains its natural appearance. Studies have shown that when all the available wood near campsites is gathered and burned, a "human browse line" forms, changing not only the character of a place but also depriving the local environment of a critical nutrient source.

Manage your campfire. No matter which campfire technique you employ remember the following:

- Never leave a fire unattended. An unattended fire, even for a few moments, can have dire consequences if a spark or coal were to ignite surrounding vegetation.

- Foil-lined packets or food wrappers, leftover food, paper plates, foil, plastic wrap, or other garbage never fully incinerates, releases deadly carcinogens into the air, attracts wildlife into camp, and regretfully encourages other people to believe that it is OK to burn trash.

Good campfire practices include:

- Burning all the wood completely to ash. This will allow for water to be more effective at putting out the fire when you are finished. Stop feeding the fire at a reasonable time, and give yourself an hour or more to add all the unburned stick ends to the fire so they can burn completely.
- Ensuring that the campfire is completely extinguished by saturating the ash with water. Make sure it's cool to the touch, and remove any trash.
- Restoring the appearance of the fire site. Restoring the site's "look" is a considerate action to take for other people who may come across this site in the future. When people encounter a clean, tidy fire ring, they're more likely to use it and also clean up after themselves instead of creating another fire ring, causing more impact.

In popular areas where no designated fire ring exists or an area with multiple fire rings, 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. Just use the existing fire grate. 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 as possible.

THE SEVEN PRINCIPLES OF LEAVE NO TRACE

RESPECT WILDLIFE

Observing wildlife is one of the many reasons we venture into the outdoors. Observing a black bear, a loon, a herd of elk, an owl, a salamander, or a woodpecker can be a memorable part of any outing. With expanding human populations, wildlife around the world is facing a large variety of threats, leaving protected lands one of the few areas of refuge for them. Given this, wild animals need recreationists who will promote their survival rather than add to the difficulties they already face.

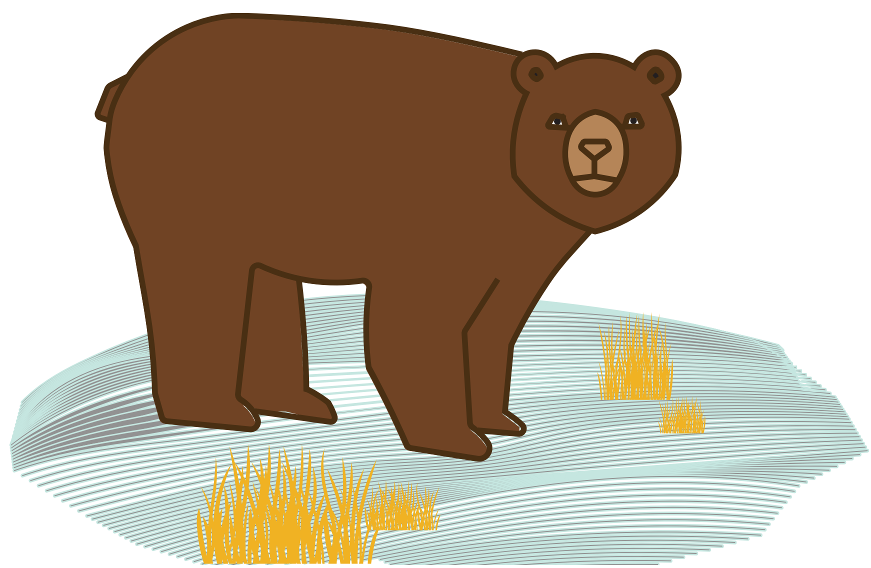
Animals respond to people in different ways. Some species adapt readily to humans in their habitat, quickly resume their normal behaviors, and are said to be "habituated" to the presence of people. Other animals flee from humans, abandoning their young or critical habitat, which is known as avoidance. Still, others are attracted to, or "conditioned to" and potentially endangered by human food and trash.

Because outdoor recreation is dispersed over large areas and at all times of the year, its impact on wildlife can be extensive if we're not careful. Fish, birds, reptiles, insects, and mammals, can all be affected by people using their habitats for recreation. We are responsible for respecting all wildlife and protecting their natural behaviors and environments.

Observe from a distance. Observing or photographing animals from a safe distance is the best practice to avoid disturbing or stressing 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.

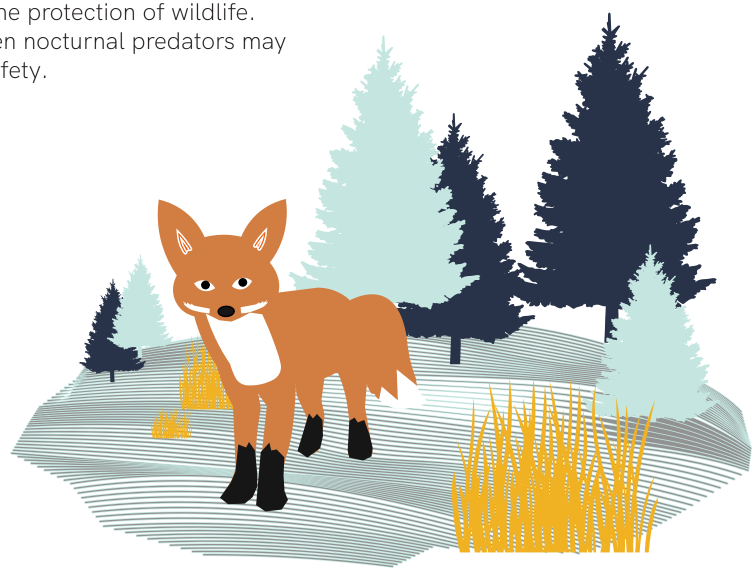
Use the observation areas, platforms, and trails provided in many areas specifically established for wildlife viewing, and bring binoculars, spotting scopes, or telephoto lenses to watch or photograph wildlife safely. If an animal changes its behavior in response to your presence, you're too close, and you should back away to keep the animal and yourself safe. To leave the area, move away from the animal even if you must detour from your intended travel direction. In many cases, you have more options in your movements than animals do. Treat them with respect and common sense.

Avoid quick movements and direct eye contact, which may be interpreted as aggression by some animals. Don't



disturb wildlife (e.g. by shouting or whistling 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 – in these habitats, you generally want to make noise to alert animals of your presence. If you plan to travel in a bear habitat, either black bear or grizzly bear, check with local land managers about safely recreating in these environments. Special considerations and/or regulations are necessary to ensure your safety and the protection of wildlife. Avoid traveling at night when nocturnal predators may present a hazard to your safety.

Adult behaviors can have a strong influence on the relationship children have with the natural world. Teach children not to approach, pet or feed wild animals. Always keep children close by. In areas with large predators such as bears or mountain lions, children are sometimes the same size as animal prey and should stay close to adults at all times. Don't crowd wildlife 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, leave it where you found it and immediately notify a fish and game officer, ranger, or local land manager.



Avoid sensitive times and habitats. Wildlife face seasonal stress such as extreme cold during winter and a short supply of water during extended drought. Extra precautions may need to be taken at certain times of the year, and in some situations may mean avoiding certain wildlife habitats altogether for your safety and the animals. For example, in Mark Twain National Forest in Missouri, wintertime disturbance of endangered Indiana and gray bats greatly decreases their chance of survival. In Montana, grizzly bears frequent berry patches in late summer. In early spring, eagles and songbirds are wary of humans and trails when choosing nesting sites.

In general, animals are sensitive to humans while seeking and defending mates and territories, birthing, guarding young or nests, and when food is scarce. Take time to learn about local wildlife behaviors and their habits. The more you understand about a species, the more considerate you can be of the animal's needs, especially at critical times and in critical places.

Never feed wildlife. Feeding wildlife damages their health, alters natural behavior, 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 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 among their population, and their reliance on human food is a serious threat to their health.

Human foods and products are harmful to wildlife because animals would otherwise find and eat a nutritious diet derived from their natural environment. Serious illness or death can occur when wildlife consumes food wrappers, processed human foods, and other "inedible" items.

Animals are skilled opportunists. When offered the temptations of an untidy picnic area or a handout from a curious camper, they can overcome their natural fear 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 and roads and entry points, where they can be hit by vehicles. They may also congregate in unnatural numbers, increasing stress and the potential spread of disease within their populations.

Store food, trash, and other attractants securely.
This includes all trash, all food including canned food, stock feed, pet food, cook stoves, fuel, insect repellent, scented or flavored toiletries such as lip balm and toothpaste, and other attractants (also known as "smellables") that have an odor, scent, or smell. The salt in hiking boots, backpack straps or waist belts, or clothing can also attract many small mammals.

Appropriate food and trash storage and transportation methods vary considerably from place to place, so consult local land managers about the best practices. If camping in a developed campground, food and trash can be easily managed. Food, including coolers, can be kept in vehicles until needed, and trash can generally be disposed of in trash cans located in the area. If camping in more remote areas or in the backcountry, other methods of storing and transporting food and trash may be necessary to ensure the safety of you and animals. 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, securing food, trash, and other smellable

items properly is the best means of ensuring your safety and the safety of bears. These items should never be stored in tents. Often, the most secure way to store food and trash is to use specially designed bear-resistant canisters or on-site lockers. Canisters are available for rent and sale at sporting goods suppliers and from some land management agencies. In some areas, canisters can be loaned for free. Many areas now require the use of a bear-resistant canister for storage of food, trash, and other attractants. Be sure to check with local land managers regarding food storage recommendations and requirements. Used properly, they ensure a good night's sleep for you and a natural diet for bears. Be sure to practice loading the canister at home to ensure that all items (food, trash, and smellables) will fit into the canister. If you can't fit everything, consider eliminating some items or obtaining another canister.

Alternatively, if hanging food, trash, and smellable items is allowed using a "bear bag hang," it should be suspended from tree limbs 12 feet off the ground, 6 feet away from the tree's trunk, and 6 feet below the supporting limb and any nearby limbs. While using a bear bag hang can work, they are often difficult to set up and require equipment including 50-100 feet of rope or cord, carabiners, stuff sacks, and plenty of time and patience. If you choose to store your food and trash in this manner, it should be one of the first tasks you undertake when you arrive at your campsite. Setting up a good bear bag hang is far easier in daylight than it is in the dark. Lastly, hanging a bear bag takes considerable skill and practice. Take the time necessary to perfect your technique at home before using it in the field.

Control your pet. When considering recreating with your pet, check to be sure pets are allowed and learn about local regulations regarding pets. In some areas, pets are allowed anywhere, while in other areas they're not allowed at all. For example, most national parks prohibit pets and emotional support animals on trails. Service animals, a dog trained to do work or perform a task for a person with a disability, are allowed. Check with the area you are traveling to for specific regulations or concerns. Where pets are allowed, ensure your animal is in good condition for the trip. Pets should have current vaccinations to avoid being carriers of or contracting infectious diseases such as rabies and parvovirus. Use a handheld leash to control your pet and prevent it from chasing wildlife or harming other visitors. If pets are allowed to be off-leash, keeping your pet within sight and earshot may be allowed but is not always sufficient to prevent scaring or harming wildlife. If in doubt about your ability to keep your pet under control, keep it on a leash. Remove pet waste from trails, picnic areas, campsites, and other natural areas by packing it out to a trash can or disposing of it in a cat hole, as you would human waste.

THE SEVEN PRINCIPLES OF LEAVE NO TRACE

BE CONSIDERATE OF OTHERS

We share natural spaces with other outdoor enthusiasts as well as with people who may live, work, or subsist in parks and protected areas. There is simply not enough space and infrastructure for every type of outdoor recreation to have exclusive use of trails, lakes, rivers, coasts, picnic areas, and campgrounds.

Being kind and considerate to others in the outdoors helps to build a more inclusive space and allows everyone to form a personal connection to nature. However, the subject of outdoor "courtesy" towards others is sometimes an afterthought. We're sometimes reluctant to examine our personal behaviors, least of all in the outdoors where, to many, a sense of freedom is paramount. The most important thing to remember is that no matter where or how people choose to enjoy nature, the outdoors is for everyone.

Respect other visitors and protect the quality of their experience. Some people visit the outdoors to enjoy quiet and solitude. Others come for a sense of community. Others come to honor their ancestors who lived on the land for thousands of years. Regardless of personal pursuits, preserving the experience of others is a key component of this Principle. Many parks and protected areas have experienced a significant increase in visitors. Be mindful of how you might affect the experience of others, and work to minimize these effects whenever possible.

Choose to maintain a cooperative spirit in the outdoors. Leave No Trace is for all people. Every person's relationship with the outdoors and the natural world is unique and personal. Commit to working toward a world in which diversity is welcome and everyone feels safe in the outdoors, in which all are equally included, represented, and have equal access to cultivate the personal connection that can inspire people to enjoy the outdoors responsibly.

Our interactions with others in the outdoors should reflect the knowledge that we are sharing the same finite spaces. Often, our experiences ultimately depend on our treatment of others and their attitudes toward us. Although our motivations and sense of adventure vary, we all want to be and should be, treated with respect, and feel welcome and safe in these shared spaces.

Give way to others. The little things are often the most important. Simple courtesies such as offering a friendly greeting on the trail, moving aside to let someone pass, waiting patiently for a turn, or preserving the quiet, all make a difference.

Pack and saddle stock have the right-of-way on trails. Hikers and bicyclists should ask the lead rider where they should move to allow the livestock to safely pass. Sometimes this is to the downhill side of the trail but not always. The riders know their animals best so follow their guidance but make sure where you move off the trail is safe and as durable as possible. Staying quiet while horses and other pack stock passes can help stock remain calm.

Stay in control while moving quickly on trails whether you are jogging, skiing, or riding a mountain bike. Before passing others, politely announce your presence and proceed with caution. Adaptive equipment users should stay within the pace of nearby traffic. For example, if you are on a hiking-only trail, travel at hiking or jogging speeds, not biking speeds. Boaters, climbers, campers, and other visitors to popular areas frequently find themselves waiting in line. Lend a hand, if appropriate, to help those ahead.

Be respectful of local and Indigenous peoples whose ancestral lands we recreate on and whose communities and seasonal camps sometimes support a subsistence lifestyle. Research the Indigenous communities whose land you are visiting. Take note of tribal land boundaries and access requirements or rules, ask permission to cross private lands, and obey special laws and restrictions. Uphold voluntary closures of public lands for Native American religious or spiritual ceremonies and activities.

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

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 or soil around you is thick or easily crushed, pick a wide spot in the trail so others can pass by. If possible, in backcountry settings, camp out of sight and sound of trails and others.

Let nature's sounds prevail. Be aware of others around you and how bright lights, music, phone calls, Bluetooth speakers, electronic games, and other devices may affect their experience. To some, technology is a necessity in the outdoors. To others, it may seem inappropriate. Avoid conflicts by making a conscious effort to allow everyone their own optimal experience.

Some outdoor activities are inherently loud. The discharge of firearms can be heard for miles, and the barking from a sled dog team almost as far. Keep the noise down, especially at night in campgrounds or in remote areas where solitude might be what people are seeking. Keep dogs quiet when appropriate. Wear headphones or earbuds to listen to music or have speakers at a volume that doesn't disturb others or impact wildlife. In some areas, laughter and the sound of people brings joy and a sense of comfort. In other areas keeping voices low and tuning into the sounds of nature can add to the experience. Lastly, some wildlife species can be significantly impacted by human-caused noise. For example, coyotes hunt by sound in the winter, listening for small prey under the snow. Excessive noise in such situations can diminish the ability to hunt. Take time to learn about the wildlife that lives in the areas where you spend time, and do what you can to minimize such impacts.

THE SEVEN PRINCIPLES OF LEAVE NO TRACE

OUTDOOR ETHICS

The Leave No Trace program teaches skills. Yet, and perhaps more importantly, it aims to impart an ethic – an overriding outdoor ethic that will hopefully guide those who enjoy the outdoors in making good decisions. An ethic is defined in many ways:

- What you do when no one is watching
- Obedience to the unenforceable
- A system of guidelines for governing our choices, and our actions.
- Acknowledgment of indigenous/Native American environmental ethics

Leave No Trace education is how we're going to make a difference for our shared lands. However, education alone is not enough to influence the decisions we make in the outdoors. Such change needs to come from somewhere deeper. There needs to be an internal ethic driving us to make good decisions about enjoying the outdoors responsibly and then following through with our actions.

It's not what you did yesterday, it's what you're doing tomorrow.

Leave No Trace is not about rules and regulations. Leave No Trace is not about right or wrong. Leave No Trace is not always clear cut – the most common answer to many

Leave No Trace questions is, “it depends.” Leave No Trace is a framework for making good decisions about how to enjoy the outdoors in the most responsible way possible.

Leave No Trace is a spectrum – on one end there are some impacts, on the other end there are very few if none. The goal of the Leave No Trace movement is to encourage all people to figure out where they fit into the spectrum – where they’re comfortable – and to do what they can to minimize their individual impacts when spending time outdoors.

The primary objective of Leave No Trace is to: prevent avoidable impacts and to minimize unavoidable impacts. By doing so we can protect and preserve both natural and cultural resources and the quality of our experiences. We can also ensure that the outdoors is inclusive of all people everywhere, and that respect is part of everyone’s outdoor experience. This is the true embodiment of an outdoor ethic for all.

A FINAL CHALLENGE

Our shared lands depend not only on us enjoying them responsibly but also on each of us lending our hand to ensure the protection of these special places. Contact land management agencies and related groups in your area to learn how you can help. Be active in the planning, management, and stewardship 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, let your opinions be known, and advocate for the protection of our shared lands. Become a mentor to someone who is less experienced and share your knowledge and love of the outdoors. Ultimately, that’s what an outdoor ethic is all about.

Obtain Leave No Trace materials and resources, find courses and training, explore the research behind Leave No Trace, and learn about other ways to enjoy the outdoors responsibly by visiting the extensive Leave No Trace website: www.LNT.org, engaging with Leave No Trace on social media, or calling 800-332-4100.

TERMS DEFINED

Attractant: Anything that has an odor, scent, or smell that may attract wildlife. In addition to food and garbage, attractants include beverage cans (empty or full), coolers, lip balm, sunscreen, bug spray, lotions, toothpaste, food panniers, horse feed, some medications, clothes worn while cooking, and cookware and eating utensils that haven't been properly cleaned. in some cases, the odor, scent, or smell may be barely discernable to humans.

Backcountry: Remote, primitive, mostly undeveloped areas. Backcountry is not the same as wilderness. Rather, it refers to a general condition of land that may include wilderness.

Bear canister: A bear-resistant container designed to safely store food, trash, and other attractants when camping overnight in bear habitat.

Designated campsite: A campsite officially designated for public use by the land management agency. These sites are often identified on maps, or with on-site signs or markers.

Established campsite: A campsite made obvious by devegetated ground or "barren core."

Endemic species: Plants or animals that exist only in one geographic region.

Frontcountry: Outdoor areas that are easily accessible

by foot, car, bike, or public transportation and are mostly enjoyed for day use. Such areas include overnight camping in developed campgrounds.

Giardia: Giardia is a tiny parasite (germ) that causes the diarrheal disease giardiasis. Giardia is found on surfaces or in soil, food, or water that has been contaminated with feces (poop) from infected people or animals. You can get giardiasis if you swallow Giardia germs, specifically in outdoor settings.

Graywater: Graywater is gently used water from cleaning dishes, brushing teeth, washing clothes, etc. It is not water that has come into contact with feces. Graywater may contain traces of dirt, food, grease, hair, and certain cleaning products such as dish soap.

Habituation/habituated: The diminishing of a physiological or emotional response to a frequently repeated stimulus. In the case of wildlife, this means that animals may become increasingly comfortable in the presence of humans over time. (Herrero, S. (2018). Bear attacks: their causes and avoidance. The Lyons Press.)

Habituation with food conditioning: A habituated animal that also eats human food or garbage behaves differently from an animal that is only habituated. Such an animal forms a simple association: "people may offer a source of food." Habituation with food conditioning has been associated with a large number of injuries in parks and protected areas (Herrero, S. (2018). Bear attacks: their causes and avoidance. The Lyons Press.)

Invasive species: Plant or animal that aggressively out-competes endemic species.

Krummholz: Stunted forest characteristic of timberline.

Living soil crusts (formerly known as cryptobiotic soils): Living soil "crusts" containing mosses, lichens, and algae.

Microbes: Microbes are tiny living things that are found all around us and are too small to be seen by the naked eye. They live in water, soil, and in the air. The human body is home to millions of these microbes too, also called microorganisms. Some microbes make us sick; others are important for our health.

Naturalize: The act of making a site look like you were never there by replacing any sticks, logs, or rocks that may have been moved, and by spreading leaves, pine needles, or other natural cover over any bare areas.

Pothole: Bowl-shaped or circular hole formed in the rocky bed of a river or watercourse by the grinding action of stones or gravel.

Pristine: A place where signs of human impacts are absent or difficult to detect.

Regenerate: Refers to the physiological renewal, repair, or replacement of tissue in plants once disturbed or damaged.

Single-track: Describes a type of hiking or mountain biking trail that is approximately the width of a single hiker or a single bike.

Smellable item: Anything that has an odor, scent, or smell that may attract wildlife. In addition to food and garbage, attractants include beverage cans (empty or full), coolers, lip balm, sunscreen, bug spray, lotions, toothpaste, food panniers, horse feed, some medications, clothes worn while cooking, and cookware and eating utensils that haven't been properly cleaned. in some cases, the odor, scent, or smell may be barely discernable to humans.

Soil erosion: The displacement of the upper layer of soil; it is a form of soil degradation. This natural process is caused by the dynamic activity of erosive agents including water, ice (glaciers), snow, air (wind), plants, animals, and humans.

Tree line: The tree line is the edge of the habitat at which trees are capable of growing. It is found at high elevations and high latitudes.

Undesignated trails: Paths created by traveling on unofficial, non-durable surfaces between campsites and other sites of interest. Sometimes referred to as "social trails."

Wilderness: Areas designated by Congress as part of the National Wilderness Preservation System.

SAMPLE EQUIPMENT LISTS

It is important to consider the equipment or gear necessary for any outing. For a quick stroll on a local trail, you may only need a few items to have a safe outing. However, as outdoor adventures get longer, more remote, or more involved, additional equipment may be necessary to ensure a safe and enjoyable experience. The following lists contain suggested items for consideration. It is highly recommended that you research the specific equipment needs for any outing you intend to take so you are adequately prepared.

THE 10 ESSENTIALS:

1. Navigation – map, compass, GPS, and extra batteries
2. Light – headlamp, handheld flashlight, or battery-operated lantern
3. Sun protection – sunglasses, sunscreen or sunblock, protective clothing to keep the sun off exposed skin
4. First aid – should include basics such as wound cleaning supplies, bandages, blister dressings, and over-the-counter pain medication
5. Knife – a single-blade or multi-tool type knife. Consider a repair kit as well.
6. Fire – waterproof matches, a lighter, and dry fire-starting material may be necessary in the event of an emergency
7. Shelter – tent, space blanket, tarp, or bivy
8. Nutrition – always bring enough food for your outing and bring extra just in case plans change
9. Insulation – jacket, hat, gloves, rain jacket, other insulating layers
10. Hydration – water (1 gallon, per person, per day, is a good starting point) and water treatment supplies

SUGGESTED DAY HIKING EQUIPMENT

In addition to the 10 essentials above, the following items are recommended:

Backpack – large enough for all your equip ment, including the 10 essentials
Clothing that is suited for the weather (or expected weather)
Proper footwear for the chosen outing – boots, trail runners, approach shoes, etc.
Water container – bottles, water bags, or reservoir
Water filtration or chemical treatment
Trail snacks
Whistle
Two itineraries – 1 you carry, 1 left with a v trusted friend or partner
Cellphone
ID
Credit card/cash
Route description/guidebook
A communication device such as a personal locater beacon or spot-type device
Gaiters
Hand sanitizer
Trowel, toilet paper, and a bag to pack out used toilet paper
Insect repellent
Trekking poles
Spare tubes or patch kits for wheelchairs or other adaptive equipment

SUGGESTED OVERNIGHT CAMPING EQUIPMENT:

In addition to the day hiking items listed above, and the 10 essentials, the following items are recommended:

Backpacking backpack (35 – 60 liter de pending on the length of trip, amount of equipment, etc.)
Tent – large enough for you and/or your traveling party
Tent footprint/ground cloth
Sleeping bag
Sleeping pad
Bear spray
Stove
Fuel
Stove repair kit
Cookset
Eating utensils/bowls
Mug/cup
Collapsible water container
Bear-resistant container(s) and/or bear bag equipment (50-100′ of nylon cord)
Toiletries
Prescription medications
Duct tape
Field guide
Book/reading material
Extra battery for charging phone, GPS, etc.
Menstrual products
Lightweight chair or stool
Permit if needed
Car keys
Camp shoes (lightweight)

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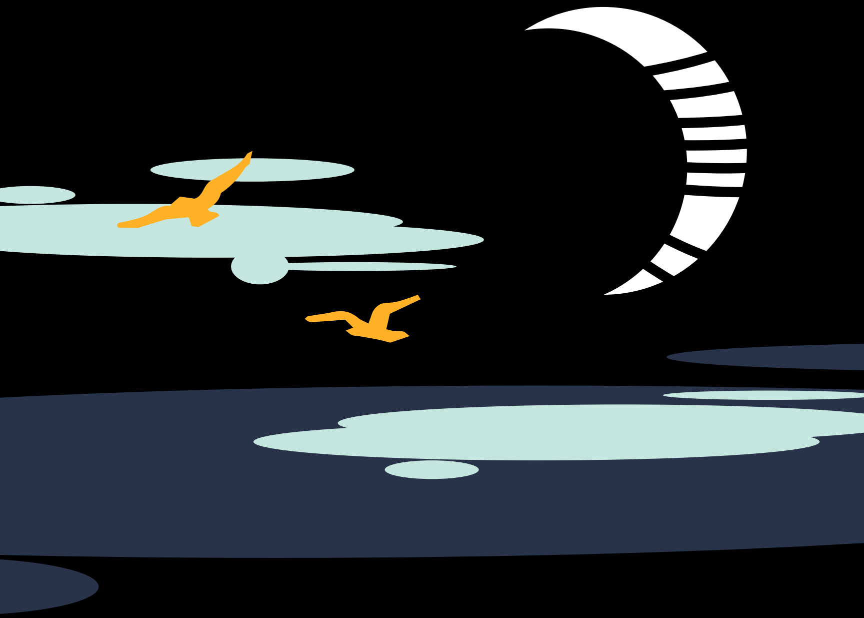
NOTES



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