

*LEAVE NO TRACE
AUSTRALIA*

KIMBERLEY REGION

Skills & Ethics



Leave No Trace Australia

P.O. Box 71 Cottesloe Western Australia 6911

Contact: Cameron Crowe: m. 0438 501112

E: info@lnt.org.au W: www.lnt.org.au

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INTRODUCTION

The Tropical Savannah comprises the grass and woodlands of the Kimberley region. It is a special environment rich with spectacular landscapes, unique history and culture and abundant varieties of plant and animal species. The Kimberley region stretches from Broome in the west to Kununurra in the east, from Lake Gregory in the south to Kalumburu in the north. It is home to many, and a popular travel destination to others. This harsh, inhospitable yet stunningly beautiful region it is often referred to as “the last frontier.”

As increasing numbers of people seek the beauty and exhilaration of outdoor travel and recreation, our collective mark on the environment and its 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 both natural and cultural heritage places. Techniques designed to minimise the social and environmental impacts to these areas are incorporated into the national *Leave No Trace* education program as the following seven principles:

Principles of *Leave No Trace*

- **Plan Ahead and Prepare**
- **Travel and Camp on Durable Surfaces**
- **Dispose of Waste Properly**
- **Leave What You Find**
- **Minimise the Impact of Fires**
- **Respect Wildlife**
- **Be Considerate of Your Hosts and Other Visitors**

The following information within these seven principles is recommended as a guide to minimise the impact of your visits to the natural and cultural heritage places of the Kimberley and beyond.

Leave No Trace depends more on attitude and awareness than on rules and regulations. Minimum impact travel and outdoor recreation practices must be flexible and tempered by judgement and experience. Techniques are continually evolving and improving. The general rule is to consider the variables of each area in terms of culture, wildlife, vegetation, soil, climate, regulations, activities and use that it receives. Use this information as a guide to determine which recommended practices to apply.

PLAN AHEAD AND PREPARE

Plan ahead by considering your goals and those of your group. Prepare by gathering local information, communicating expectations, and acquiring the technical skills, first aid knowledge, and equipment to make the trip a success.

Build *Leave No Trace* principles into your plans by picking an appropriate destination for your group and allowing plenty of time to travel and camp. Be prepared to sit tight or turn back if you sense danger or sustain an injury. That way, you won't have to abandon *Leave No Trace* techniques for the sake of safety. For instance, poor planning or disregard for weather conditions can transform an easy bushwalk into a risky encounter with extremes in temperatures. Suffering from heat stress and fatigue, it's tempting to think that the impacts of cutting branches for shade or shelters are justifiable. Prevention by obtaining knowledge beforehand is always the better solution.

Educate yourself

First and foremost, it is important to carefully review and follow all agency guidelines (e.g. Department of Conservation and Land Management (CALM) and traditional or pastoral landowner regulations and recommendations for the area in which you wish to travel. This booklet is intended to support and complement these guidelines. Because every outdoor area and activity is unique, regulations and permit stipulations can vary from location to location. Learn how to *Leave No Trace* wherever you go.

Ask first

Start by asking about Indigenous cultural and local pastoral heritage, ecology and minimum impact practices and guidelines for each location. Find out who are the traditional landowners or pastoral lessees. Always check for and respect local customs and landowner wishes. Preferably beforehand or upon arrival, seek local information and protocols from Indigenous community organisations (and ask if there are any restrictions on carrying alcohol) and pastoralists to obtain permission to visit. Always allow adequate time for this to proceed, as an immediate response is not always given.

Land management agency websites, offices, and visitor information centres can also offer information on special regulations, Indigenous and historically sensitive/significant sites, environmental concerns, and trip planning, as well as education and volunteer opportunities. Other information sources include outdoor gear suppliers, bookstores, clubs and non-profit groups, local cultural land councils and conservation organisations, libraries and nature interpretive centres. These sources can often be contacted online.

Plan for your group

Local conservation and land managers, pastoralists and Traditional Owners can suggest places suited to your group size and needs. The area in which you choose to travel should reflect the skill level and objectives of your group. For example, people expect some noise and commotion around picnic areas, large campgrounds, and developed recreation sites. In natural and cultural heritage places, visitors want to experience the surroundings without these distractions.

Keep it Small

Regardless of the size of your group and the purpose of your outing, the practice of *Leave No Trace* techniques requires care and forethought. Whenever possible, visit natural and cultural heritage places in small groups (no greater than 6 to 8). A large group has more physical impact on the landscape and could be split into smaller units. A larger group can also be boisterous and disruptive to other travellers unless they are well supervised. If you are planning for a large group try to include enough experienced leaders so the group can be divided to walk and camp separately. Always inquire about group size limitations in advance. Large and less knowledgeable groups are best accommodated in areas where there are already developed tracks and campsites. Some elements of *Leave No Trace* could be taught to these larger groups before leaving home.

Schedule your trip to avoid times of high use

Visits to popular destinations during peak use periods, such as holidays and weekends, are often fraught with traffic, crowding, delays, and conflicts with other groups. Instead, visit at other times, such as midweek, for a less crowded—and more enjoyable—experience. Alternatively, choose to explore out-of-the-way places. Make reservations and obtain permits early to avoid unpleasant surprises. Avoid travel when environmental conditions, such as early season muddy tracks, make high use recreation impacts more likely or severe.

Use proper gear

Prepare for extreme weather, hazards, and emergencies. Find out about and what to expect from the Kimberley. Obtain and study maps and get local hazard information from landowners and agencies. Pack a camp stove and fuel, a pot, matches, a signal mirror, and whistle or fluorescent vest. Always carry a good map, compass, plenty of food and water, a water filter or purification tablets, warm clothing, and protection from the sun and insects. Be familiar with and test your gear before you go into the bush.

Equipment that keeps us safe can also reduce impacts to our surroundings. Some examples are:

- A camp stove, which provides a quick meal without charring a single stone or destroying cover for wildlife.
- Packing thermal clothing has much less impact than depending on building a fire for warmth.
- Packing a lightweight trowel allows us to dispose of human waste properly.
- In muddy areas—where we might want to step on trackside vegetation and widen the track to keep our feet dry—gaiters or weatherproof boots allow us to continue ahead without getting wet.
- Packing lightweight camp shoes can reduce the impact of surfaces around camp.
- Bringing collapsible water carrying containers gives you the flexibility of choosing to camp in appropriate minimal impact sites when they are further away from a water source.
- A lightweight fly instead of a tent might create less of a footprint if used properly.

Plan your meals

Adequate food can be essential to the success of a trip, but it's a mistake to bring too much as it adds weight. Limit rubbish by planning meals to avoid

leftovers. Choose durable foods that can stand up to packing as well as heat and will be in better shape and more attractive at the end of the day. Package your food in reusable containers or plastic bags (ant-proof and quoll-proof). Remove wrappers and heavy packaging in advance, so you won't be tempted to leave them behind. Be aware that unattended, accessible food can attract crows and dingos, which can spread packaging over a wide area.

Carry Water

Water is an extremely precious resource in Australia and is not necessarily readily available at the turn of a tap. Most Australians practice water conservation whether in the bush or in the city and expect travellers to do the same. Water in the Kimberley region is extremely important in most months and can be non-existent during the dry season. Plan ahead by checking water availability within the area you wish to travel and carry extra drinking water as consequences and conditions could be life threatening. Most times water needs to be purified when travelling in the bush. Water purification tablets and filters are available in most quality camping and outdoor supply companies.

Develop the skills

Know the skills that are needed for your chosen activity:

- Learn from an experienced friend, take a course, or hire a competent guide.
- Make sure that first aid, navigation, and self-rescue are part of your training, and be sure you're in adequate physical shape for the trip.
- Know what to do in case of a medical emergency before you travel.

Leave No Trace practices vary geographically. Develop the skills to make good choices. For example, it's important to know the variances in climatic conditions in the Kimberley to decide the best time to travel. Something as simple as poor navigational skills can turn a fun weekend hike into a high impact costly search and rescue. Learn as much as you can about your destination like temperature and moisture variability specific to the months of your travel in order to have fun there while staying safe and protecting the land.

Take responsibility

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

Where it is possible, register at the start of the track, with a ranger in the local office or in some cases with the local police and Search and Rescue (SAR). Always give a responsible friend your itinerary and instructions explaining what to do if you don't return on schedule. Stick to your plan as closely as possible. Be a competent navigator. Always carry a map and compass and know where you are at all times. Stay with your group. Do not build cairns or deface rocks or trees to mark your way. Flagging tape should also be avoided. If flagging tape is absolutely necessary, be sure to remove it before leaving the area.

Special considerations:

Four Wheel Driving

Prepare yourself by taking a 4WD course ahead of time. Prepare your vehicle for extreme road conditions. Have appropriate recovery gear and know how to use it. Carry extra water and food for emergencies. A satellite phone (with emergency phone numbers), EPIRB, First Aid Kit and flares are highly recommended. Contact Main Roads for road conditions and the Bureau of Meteorology for an update on weather. (www2.mainroads.wa.gov.au and www.bom.gov.au) Be aware that conditions can change rapidly. Be cautious. Take care. Expect to be self-sufficient as emergency services are a long way away.

TRAVEL AND CAMP ON DURABLE SURFACES

What effect does a footstep have? The answer is, it depends. A footstep means different things to a young tree and field grass, to leaf litter and fragile soil, to a gravelly riverbank and Spinifex grass. It is also paramount to consider that the Kimberley region has millions of visitors to its natural and cultural heritage places each year. Consider multiplying the number of footsteps walked by each visitor to fully understand the impacts on the land.

Unfortunately, trampling causes vegetation damage and soil erosion in virtually every environment. Recovery that takes a year in some environments might take 25 years or more in others.

Other impacts are also possible. Most soils contain animals that live or feed on decaying plants. Trampling and the removal of rocks destroy habitat for reptiles, and invertebrates, as well as the fungi that fertilise the soil and help make re-growth possible. Vegetation protects underlying soils. Once plant growth is destroyed, erosion can continue with or without further use.

In general, wherever you travel and camp use surfaces that are resistant to impact such as rock outcrops, sand, gravel, dry grasses, and water. Dry Tropical Savannah grasses tend to be relatively resilient. Avoid non-durable surfaces such as soft plants, riparian zones, muddy sites, and fragile soil layers. Once damaged, vegetation of the Kimberley region has a questionable chance of recovery. Growth rates are dependent on an inconsistent and short wet season. Most vegetation has adapted to survival in drastic changes between wet and dry. However, once the root system of a plant has been disturbed it could have absolutely no chance of regeneration.

Where it is possible, avoid steep slopes. When travelling across hills try to contour (ascend or descend on an angle) the slope. This will create less damage to the surface layer and discourage erosion.

Concentrate use in popular areas

In popular areas, aim to concentrate use on tracks, established campsites, and other developed sites such as the start of tracks, boat launches and picnic areas. Concentrating use in these areas and, if necessary, on the surfaces mentioned earlier, will minimise disturbance to soils and vegetation.

Drive on designated tracks. Even though, there is an ability and therefore, a temptation to 4WD to new untouched destinations, the impact of vehicle use in remote places can have far reaching effects. New tracks cause initial vegetation loss and attract other 4WD exploration. Repeated use leads to permanent degradation and erosion. *Leave No Trace* by sticking to existing tracks and avoiding creating new ones.

Walk on designated tracks. On tracks, walk single file in the centre of the track—even where it's wet, rocky or muddy. Tracks become progressively wider and form parallel paths where people walk on their margins or detour around obstacles. Likewise, "social tracks" mar campgrounds and other popular areas. Always use established roads and tracks to visit campsites and other places of interest. Shortcutting a track has severe consequences. Shortcuts become tracks or gullies that require costly restoration. Avoid areas where efforts to restore vegetation and soils are in progress.

Boating, fishing and other water-based activities can damage shorelines, wetlands, and riverbanks. Inquire locally for the best locations in order to minimise your impact on these resources, and review the area specific outdoor ethics relative to water-based recreation. Always choose durable sites to launch, anchor, and dock your boat, and avoid sites rich in wildlife. Lifting your boat rather than dragging it will save impacting any surface.

Use established campsites.

First and foremost, use established campsites and follow all park rules and regulations in regard to camping sites. Some areas will be designated as not suitable for camping. Find this out before you set up your camp.

Choose a well-established campsite that's big enough for your group. Some popular areas have officially designated campsites, shelters or platforms. Use of these amenities can reduce damage to surrounding vegetation and other natural features.

Where campsites are not formally designated, look for and use sites where the ground cover is already worn away. Tents, packs, gear, and the kitchen area should be concentrated in one area on previously compacted, naturally resistant, or reinforced surfaces. This approach protects surrounding vegetation and prevents development of "satellite" sites. In camp, wear soft-soled shoes and concentrate your activities in the centre of the site to avoid enlarging it.

Also consider your visual impact on other users or wildlife. Take advantage of opportunities to tuck your tent out of view behind natural screening such as trees or rocks.

Good campsites are found, not made

What makes the perfect campsite? Aesthetics, safety, privacy, and comfort are all measures of a desirable campsite. However, securing such amenities does not entail a major remodelling effort. Look for a level spot rather than creating one. Use a waterproof groundsheet or tent with a sewn-in floor so that you won't have to dig drainage ditches to deal with runoff in wet weather. Bring lightweight furniture and conveniences along to eliminate the desire to build them on-site. Camp stoves, mattresses, tables, chairs and lanterns—even solar showers—are readily available, and they pack in and out with ease.

Leave rocks and logs where they are found to avoid damaging habitat for small creatures like reptiles and insects. This will also help to maintain the beauty and natural integrity of the site that we travel to see. Oftentimes one can detect the removal of rocks and logs at a damaged site. In this instance, one may endeavour to help nature along by moving rocks and logs back into their normal positions especially if the damage is obviously recent.

Trees are often damaged near campsites. Take care not to break off branches while securing tent or clotheslines, and when suspending food (to discourage scavenger animals such as Quolls and Possums). Place a stuff sack or other material under ropes or where padding is necessary to protect bark.

Trees shouldn't be targets or storage sites for axes and knives or altered with wire and nails. All of these can introduce disease and will definitely leave permanent scars.

When travelling with stock, use a high line, portable fencing or hobbles to restrain the animals without tying them directly to trees.

Disperse use in natural areas

Proliferation of tracks and campsites has alarmed landowners, land managers and travellers across northern Australia. Campsites are sprouting up in traditionally low use areas. Only visit remote or natural areas if you are skilled in and committed to *Leave No Trace* techniques.

If you would like to travel off-track where no established routes, tracks or campsites exist, use the most durable surfaces such as bare rock, gravel, sand, and navigable water. These are the most resistant to change. Dry grasses and sedges (which resemble grasses and are common to the Kimberley region) are also naturally durable and resilient due to their hardy root structures, flexible stems and faster growth rates.

Stick to existing tracks where possible. Some areas are prone to erosion, vegetation grows slowly or rare species may be present. Surprisingly, some of the most sensitive plants like Spinifex grass grow in the toughest places like sandy soils and rocky ledges.

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

Where to walk. Off-track travel may not be appropriate in some areas. Endangered species may only grow or live where off-track bushwalkers are the most serious threat to its survival. If you absolutely must travel through fragile terrain, try to place your footsteps in the least destructive locations and encourage your companions to step in exactly the same spots.

Be careful to avoid fragile vegetation, such as broad-leaf flowering plants, tree seedlings, woody-stemmed plants, mosses and lichens. Try to choose a route that minimises damage to sensitive plants by walking on rocks, bare ground or skirting around fragile places. Avoid trampling, kicking over or removal of smaller rocks, which can destroy habitat for small creatures such as insects, termites, reptiles and molluscs. Gravel is an example of a very durable surface and can sometimes be found along streams and ocean shores. Leaf litter and dry grasses also make good choices for travel.

Where to camp. Select the most durable camping location possible—or keep travelling until one is found. In natural areas, pre-existing camping spots, even those that are lightly used, should be left alone to recover. Before unpacking your tent, look for obvious bird nesting activity and other signs of animals. Choose an area that seems safe, free of wildlife, and well suited to low-impact camping. Camp well away from water bodies to avoid encounters with both Fresh-water and Saltwater Crocodiles. (Refer to Crocodile Practices in Respect Wildlife section of this guide.)

Look for a large rock slab, a gravelled area, or other equally durable space to locate your kitchen and sleeping area. Concentrate your activities on this surface whenever possible to protect more fragile areas. If necessary, try to reserve less durable ground for your sleeping areas.

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

Protecting fresh water resources

While sand and gravel bars along large rivers are durable surfaces that may be suitable for low-impact camping, vegetated lakeshores and the banks of small streams are fragile and easily eroded. Plants and animals also congregate at these water sources, so camp at least 100 metres (100 adult steps) away unless local guidelines indicate otherwise. In the Kimberley region, this practice gives wildlife vital access to waterholes and springs. Also, by distancing camps from water, you are less likely to inadvertently pollute them.

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

Breaking camp

Before departing, naturalise and disguise the site by replacing any rocks or sticks you may have moved. Re-cover scuffed-up areas with leaf litter or other natural materials. Fluff up matted grass and make the place less obvious as a campsite. As long as overall visitor use is very low, the site will retain its best qualities. Ideally, no tracks or campsites will be created if visitors disperse their activities and choose the right surfaces. 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. By taking time and care, we will succeed in protecting our natural heritage and ensure a positive wilderness experience for those who may follow.

DISPOSE OF WASTE PROPERLY

Rubbish

“Pack it in, pack it out” is a familiar mantra to seasoned travellers into natural areas. Any user of recreation lands has a responsibility to clean up before they leave. Inspect your campsite and rest areas for rubbish or spilled foods. Pack out all rubbish and kitchen waste, including leftover food.

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

Overlooked rubbish is litter, and litter is not only ugly—it can also be deadly. Animals scavenging a meal from a tasty smelling morsel can ingest bits of dropped food packaging damaging their digestive system. Plastic six-pack holders, cans and plastic bags kill birds, small mammals and reptiles. Fishing lines, lures and nets ensnare, injure and maim wildlife. Take care not to leave any of these items behind.

Pack extra plastic bags so you can carry your rubbish out (and maybe someone else's). Before moving on from a camp or resting place, search the area for “micro-rubbish” such as bits of food and packaging, including cigarette filters and organic litter such as orange peels, or egg and nut shells. (Organic waste has very slow rates of decomposition in the dry season of the Kimberley region. Often animals dig it up, even if it is buried.)

Do not leave rubbish at the end of the track unless there is a proper waste disposal system and it has been designated for that purpose.

As well, 4WD drivers can easily prepare for rubbish disposal by carrying a sealable container and extra rubbish bags in the back of their vehicle. This will help remove rubbish from a remote and isolated environment. Take it to the nearest large population centre. (i.e. Broome, Derby, Kununurra...)

Practice good sanitation in the disposal of human waste

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

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

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, rainstorms can flush these wastes and other pollutants from campsites directly into water sources. (Livestock and wildlife can also be responsible for the presence of bacteria in wilderness areas.)

Facilities/Toilets. Whenever possible, take time to locate and use toilets, dunnies, and other developed sites for human waste disposal.

Cat holes. If no facilities are available, deposit solid human waste in “cat holes” dug 10 – 15 cm deep and at least 100 metres from water-bodies, camp, tracks, and watercourses. To promote decomposition, choose a site in organic soil, rather than deep sandy mineral soil and in the sun rather than the shade. Bring a trowel to dig the hole, and gently remove a plug of sod containing roots and soil and carefully put it aside. After use, and before replacing the plug of sod, use a stick to mix some soil into the faeces to promote decomposition. The microbes found in the organic layer of soil will break down faeces and the pathogens they contain. (In some locations the organic layer may be shallow or almost non-existent. Do your best to seek out the most appropriate site.) Replace the plug and disguise the hole by lightly tamping down around the edges. (In busy areas, some will stand a stick vertically to mark the used cat-hole site) Then “naturalise” the site by scattering leaf litter and disguise it well after use.

Human waste should not be deposited under rocks because it will decompose slowly there and may wash into water sources after a heavy rain. Good cat hole sites isolate waste from water sources such as lakes, streams, dry creek beds, ravines, bogs, waterholes, and other visitors. Whenever possible, use a remote location during the day’s travel to help prevent high concentrations of cat holes near campsites.

“Natural” substances like smooth stones, grass, and sticks can be a surprisingly effective substitute for toilet paper and can be buried easily in the cat hole. If this is undesirable then plan ahead to pack out the used toilet paper with you in a plastic bag. This practice leaves the least impact on the area. Burning toilet paper at the site has caused bushfires, rarely burns completely, and is not recommended. Always pack out feminine hygiene products because they decompose slowly and attract animals.

If the cat hole method is ill suited to your group, try to camp where a dunny or pit toilet is available.

Slit Trench (Latrine). When travelling with children—and in other situations where cat holes may not be used properly—it might be best to dig a slit trench. Site the trench as you would a cat hole and make sure that the route to it is over durable surfaces. Dig a trench 10-15 cm deep, and long enough to accommodate the needs of your party. Use soil from the trench to cover the faeces after each use. Dispose of toilet paper by packing it out in a plastic bag or burying it well at the bottom of the trench. Fill in the complete trench with soil and naturalise the site before leaving.

Carry out waste. Visitor use is often high and soils sparse in gorge and desert areas. Recreation managers trying to protect human health and water sources employ a spectrum of toilet designs and approaches to managing human waste—even airlifting waste with helicopters. One option is to carry and use a homemade container such as a “poop tube” or a commercial device such as a waste alleviation and gelling product (eg WAG™ bag) designed for transporting human waste. Dispose of the contents in pit toilets or according to package instructions. Local land managers may recommend other appropriate disposal techniques.

Urine. While the odour of urine can be a problem in popular areas, especially along river corridors, it is typically not a health concern. Urinate well away from camps and tracks. In some environments, urine attracts wildlife with salt-deficient diets. Animals sometimes defoliate plants to consume the salt in urine, so urinate on rocks or bare ground rather than on the vegetation. Where water is plentiful, consider diluting the urine by rinsing the site.

Special Environments

Gorges

Dispose of human waste away from gorges by leaving the environment and by digging a “cat hole “ as explained previously, at least 100 metres away from the gorge rim. Urinate, unless instructed otherwise by a land manager, directly into rivers where dilution is the solution to pollution.

Dishwashing

For dishwashing with soap, use a clean pot or expanding jug to collect water, and take it to site at least 100 metres away from water sources. This lessens trampling of lakeshores, riverbanks and springs, and helps keep soap and other pollutants out of the water. Use hot water, elbow grease, a stainless steel scourer and a small amount of soap. Strain your dirty dishwater with a fine mesh strainer before scattering it broadly. Do this well away from camp. Pack out the contents of the strainer in a plastic bag along with any uneaten leftovers. Animals should not be allowed access to any human food and food waste for reasons discussed in the “Respect Wildlife” section.

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

Bathing

Soap, even when it’s biodegradable, can affect the water quality of lakes and streams, so minimise its use. Always wash yourself 100 metres or more from shorelines and rinse with water carried in a pot or jug. This allows the soil to act as a filter. Where fresh water is scarce, think twice before swimming in creeks or waterholes. It may be the only drinking water available for you, others and local wildlife. Lotion, sunscreen, insect repellent and body oils can contaminate these vital water sources. Hand sanitisers that don’t require rinsing allow you to wash your hands without worrying about soapy wastewater disposal.

Toothpaste

Toothpaste can often be a recognisable and unsightly indicator of the presence of humans. It is also a sweet smelling food-like product, which can attract animals to campsites. The impacts of toothpaste use can be reduced in several ways. Brushing with water alone has the least impact of all. However, if toothpaste is a difficult habit to give up, then try to use as little as possible, and either swallow it or disperse it using the “atomising” method. (Blow as much air and water as possible, along with the toothpaste, through the smallest opening of your mouth in order to spray tiny particles over a broad area.) Alternatively, dig a small hole and bury it.

Dispose of hunting and fishing entrails

The remains of fish and other hunted animals should be left well away from tracks, water sources, and campsites. In some situations, it may be

appropriate to bury, completely burn, or pack out the viscera with the rubbish. Official guidelines and recommendations vary considerably from place to place, so call ahead for specifics. **(It is important to note that all native species of fauna are protected and cannot be taken without a permit.)**

LEAVE WHAT YOU FIND

People visit natural and cultural heritage places for many reasons, among them to explore nature's mysteries and surprises. When we leave rocks, shells, plants, feathers, fossils, artefacts and other objects of interest as we find them, we pass the gift of discovery on to those who follow. Particularly, never touch Aboriginal rock art or disturb sites of significance.

It's the missing elements of our favourite places that disturb us the most. "Leave What You Find" means retaining the special qualities of every natural and cultural heritage place—for the long term.

Respecting Culture

Indigenous rock art and engravings are manifestations of belief. Be mindful that large numbers of visitors place enormous pressure on sites. Never interfere with rock surfaces and cultural artefacts. Be aware that by touching artworks and motifs, our skin oils can cause considerable deterioration.

Also it might be necessary to observe respectful, quiet behaviour while some sites may have specific rules. Check with local Indigenous communities for instructions. Some sites of significance have been recorded and are protected under heritage legislation while many are not. Regardless, never remove materials from a site for souvenirs.

Conserve the past

Archaeological and historical artefacts are reminders of the rich human history of the landscape and belong to all people for all time. Structures, dwellings and artefacts in natural and cultural heritage places are protected by law and should not be disturbed. These include seemingly insignificant Indigenous implements such as grinding stones, and pioneering and pastoral equipment from 50 or more years ago. It is illegal to excavate, disturb or remove these resources from any public or wilderness lands. Observe but do not touch them.

Leave natural objects undisturbed

Load your camera, not your packs. Let photos, drawings and memories comprise your souvenirs. Although natural objects may be collected on some public lands, a permit is often required. Collecting is prohibited in national parks and wildlife refuges. All natural features such as rocks, plants and animals are totally protected. Federal and state laws protect natural and cultural heritage places. Practice and encourage restraint.

Help people investigate the role of natural objects in their own environments. Remind them that these things fill important ecological niches: mice gnaw bones for their calcium; a snake finds shade under a piece of driftwood; 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 in a home.

Spreading invasive species

Non-native (introduced) species of plants, animals, and organisms can cause large-scale, irreversible changes to ecosystems by predation and competition for food, shelter and space, subsequently, eliminating native species over time. For example, introduced Cane Toads from South and Central America

are prevalent in Queensland and the Northern Territory and are making their way west. They are responsible for the decline across Queensland and the Northern Territory of many native frog, reptile and mammal species through competition, predation and their highly toxic poison. They are prohibited in Western Australia. They are of major concern and an imposing threat to the Kimberley.

Another threat to biodiversity in the northern wetlands is the infestation of the Giant sensitive plant, *Mimosa pigra* as well as the Noogoora Burr. Both introduced species spread quickly and choke out native local vegetation especially along waterways. Introduced invasive grasses can dramatically reduce foraging areas for native wildlife and can cause lasting damage through increasing the intensity of fires, killing trees. In Australia, there are few effective treatments for many invasive species. We are losing the native, living natural heritage protected lands are intended to conserve. It is a continual fight, which highlights the best solution as being prevention.

Visitors to the natural and cultural heritage places play a role in the spread of invasive species by transporting soil, live animals, plants and seeds such as those listed above, and agents of disease like the faecal borne spread of *Giardia*. The potential for new infestations increases every day as more and more outdoor enthusiasts travel from one area to another around the globe.

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

- Do not go into Quarantine Areas.
- Do not transport soil, flowers, weeds, or aquatic plants into the wilderness. Check for prickly and sticky types of seeds and remove them to the rubbish or burn in a hot fire.
- Empty and clean your packs, tents, boats, fishing equipment, vehicles, and other gear after every trip. Water, mud, and soil may contain harmful seeds, spores, or tiny plants and animals.
- Clean all dirt out of your tent pegs, boots and tyre treads.
- Remove grass seeds from your clothing and wear sock protectors.
- Use wash stations where they are provided.
- Travel through unaffected areas first and affected areas second.
- Never discard or release live bait.
- Make sure packhorses and pets are immunised, and their coats are free of seeds, twigs, and harmful pests such as ticks. **(Non-indigenous animals are banned in National Parks.)**
- If you carry hay or other feed, make sure it's weed-free. Feed pack animals food that is certified weed-free for at least three days before entering the natural and wilderness areas to stop their digestive systems from depositing invasive seeds during your travel.
- Follow all *Leave No Trace* guidelines for waste disposal to avoid introducing disease to water sources.
- Help landowners or land management agencies initiate control efforts by alerting them to infested areas.

MINIMISE THE IMPACT OF FIRES

Wildfire destroys thousands of square kilometres of bush each year in Australia. Uninformed campers and travellers either carelessly or accidentally start many of these fires. Starting controlled bushfires is a practice and science of experienced land managers and Indigenous people, and is based on weather conditions, sources of ignition, and fuel loads. Fire is an important management tool for landowners for the purposes of reducing the incidences of hot fires, promoting feed, and promoting biodiversity.

A large uncontrolled bushfire set unintentionally or accidentally during hot, dry windy periods can spread rapidly and result in the critical loss of natural habitat, property and human life.

Along with the destructive nature of fire, the natural appearance of many recreation areas has been compromised by the careless use of campfires and the demand for firewood. Campfires are beautiful by night. The enormous rings of soot-scarred rocks – overflowing with ashes, partly burned logs, food and rubbish – are unsightly by day. Surrounding areas have been stripped of their natural beauty and vital habitats as every scrap of dry wood and sometimes, live wood has been collected and torched. Rocks end up permanently blackened and removed from their ecological function as shelters for small creatures. "Firewood" is essential cover for many small creatures foraging on the ground- removal of this cover results in the animals being eaten or starving, as they cannot forage safely, resulting in a reduction in biodiversity.

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

Check local regulations and conditions

It may be prohibited to build a campfire in some areas. "Fuel stove only" areas are becoming more common and a standard land management tool. Many National Parks and other Protected Areas have complete fire bans. Check with local land managers or Traditional Owners whether building a campfire is permitted. Seasonal dryness may play a role in the period of time in which campfires are allowed. Total fire bans are common during northern Australia's summer and autumn seasons.

Use a stove

Check for a complete fire ban first which will include stoves. Carrying a fuel stove is always preferable and the best way to be prepared for all situations. It is the best way to *Leave No Trace* while cooking. As well, carry a pot, matches and sufficient fuel to cook all meals. Be careful to set up your stove on a durable, stable, non-flammable surface.

Use a Candle

If there is no fire ban, a candle can be an effective light source and an alternative to a social campfire. Set the candle in a rigid clear plastic bag with the opening of the bag turned down and weighted with sand. Candles that are of the non-drip variety like "church" candles leave no trace of wax in the

sand. Afterward, the sand can then be scattered without the worry of wax residue being left behind.

Do not light fires. If you are in declared “fuel stove only” areas, in hot summer conditions, in dry windy weather, or when there is a declared fire ban, do not light a fire.

Fires are inappropriate in fragile environments and/or where plant growth is extremely slow. Always use a fuel stove in places where even a tiny fire may cause permanent damage. Sadly, wood that has taken years to grow has often been burnt for a few short minutes, just for the sake of entertainment.

Do not light fires in rock shelters or caves. Smoke from fires can permanently scar rooftops and potentially damage sacred rock art sites.

If you feel you absolutely must have a fire, build a minimum impact fire

Consider whether a fire makes good sense at your picnic or campsite. If you decide to light a fire, make sure all of the conditions are right.

If a campfire is important to you:

- Ask yourself if the wood you are using comes from a sustainable yield.
- Know 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.
- In places 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.

Choosing the style of Fire

Established fire ring. If you camp near an existing rock ring, use it instead of building a new one. The most inviting fire rings are of a reasonable size and free of excess ashes, half-burned wood and rubbish. This will encourage others who want a fire to use it. Only leave a fire ring if there was one previously but dismantle it completely and disguise it if the area is not of high-use has a chance of recovery.

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

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

Pan fires. Fire pans are metal oil pans or aluminium roasting pans that make good containers for low-impact fires. Use a pan on a durable surface devoid of vegetation and 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

sterilisation of soils below. Drill two or three holes through the side of the pan to allow for ventilation and to allow easy transport when attaching it to a pack with a piece of cord.

Mound fires. Mound fires are built on pedestals of sand, gravel, or on soil with a low organic content. Try to disturb as little vegetation as possible when collecting this material. Carry it to a durable fire site using a stuff sack (it will require several loads). Construct a pedestal 25 cm thick and 75 cm in diameter on top of a tarp or ground cloth. This will make it easier to clean up. The cloth can be rolled up under the edge of the mound to prevent embers from singeing it. A thick enough mound insulates the ground and the tarp or ground cloth from the heat of the fire. Be sure to return the soil to its source when the fire is completely out.

Use dead and downed wood

Smaller fires will have less impact. Don't snap branches off trees, either living or dead, because this scars them. Use only sticks from the ground that can be broken by hand. Collect wood from long grass, rather than open ground, as wood on open ground is the only cover provided to wildlife from aerial predators. 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.

Smaller firewood and wood that breaks easily burns completely to ash, which makes the clean up easier. Half-burned logs present a disposal problem—and often a disagreeable sight for the next campsite visitor. The use of hatchets, axes or saws isn't necessary or desirable. In the natural areas, gather firewood on the way to your camp so that there is less impact on a particular site and the area around your site retains a natural appearance.

Management and Clean-up of your campfire

No matter which campfire technique you employ:

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

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

RESPECT WILDLIFE

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

Animals have a special place in the lives of Indigenous people. Many of them have a specific totemic relationship and are considered significant. Respecting all wildlife ensures that you are respecting Indigenous culture at the same time.

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

Because outdoor recreation is dispersed over large areas and at all times of the year, its impacts on wildlife can be equally as disruptive. All species are to some extent, affected by people visiting their habitats. We are responsible for coexisting peacefully with wildlife.

Observe from a distance

Always watch or photograph animals including birds from a safe distance to avoid startling them or forcing them to flee. Do not follow or approach them. Use the observation areas, platforms and trails provided in many areas, and bring binoculars, spotting scopes, and telephoto lenses to watch wildlife. Back away if animals react to your presence. To leave the area, move away from the animal even if you must detour from your intended travel direction. You have more options in your movements than animals do. Treat them generously.

Avoid quick movements, pointing and direct eye contact, which may be interpreted as threatening. Don't disturb wildlife (i.e. by shouting to get their attention) to get a better photo. If animals are on the move, stay out of their line of travel. Travel quietly. If walking at night wear covered footwear and carry a torch to reduce the chances of standing on a snake.

Adult behaviours can influence the relationship of children to the natural world. Show respect and restraint by teaching children not to approach, pet or feed wild animals. Always keep children in immediate sight. They're often the same size as prey (for dingoes, crocodiles etc.).

Don't encircle, crowd, tease or attempt to pick up a wild animal. This could cause young animals to be abandoned by their parents. Don't point at or gather around birds nests- this might attract unwanted attention from predators such as crows or birds of prey. Notify the local land manager if you do find an injured animal or one in trouble.

Crocodile Practices

There are two species of crocodile commonly found in northern Australia. The most dangerous to humans is the Estuarine Crocodile (*Crocodylus porosus*) that occurs along northern coastlines but can be found a long way inland in freshwater rivers and billabongs as well. Attacks have killed and seriously injured people travelling in the north. Crocodiles are efficient predators, are capable of a surprising turn of speed and can be up to 5 metres long. Humans are potential food to Estuarine crocodiles. Crocodiles may be attracted by the noise produced by small boat engines.

Freshwater Crocodiles (*Crocodylus johnstonei*) are also commonly found throughout the north and in general grow to only approximately two metres in length. Even though they are somewhat smaller they should also be given respect as their sharp teeth can still pose a safety risk.

Some general suggestions for your safety (* adapted from "A Guide to Kimberley National Parks", Department of Conservation and Land Management, Western Australia) while near their habitat are:

- Observe warning signs erected by local authorities. (These do not occur in every situation.) It is best to treat all waters whether salt or fresh as potential crocodile habitat.
- Check with experts (e.g. CALM) before swimming, camping, fishing or boating. Crocodiles can easily hide in murky water. Be especially wary of any waterway that has direct ocean access.
- Keep watch for crocodiles, especially when children and pets are near the water.
- Don't paddle, clean fish, prepare food, and continue to draw water or camp near the water's edge. Do your chores at least 100 metres away from the shoreline and don't return to the same waterside spot twice.
- Don't lean over the edge of a boat or stand on logs overhanging the water.
- Stand a few metres back from the water's edge while fishing.
- Dispose of food scraps, fish offal and other wastes properly and away from your campsite.
- Don't feed or molest crocodiles.

Avoid sensitive times and habitats

Consider the seasonal stresses that wildlife face. In some situations, avoid their habitats, for your safety and the animals'. Birds, during breeding season, may leave their nests permanently if they are disturbed too often. Consider travelling to avoid these seasons.

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

Never feed animals

Feeding wildlife damages their health, alters natural behaviours, and exposes them to predators and other dangers. Feeding wildlife can encourage aggressive behaviour from wild animals. For example, dingoes can easily get

used to scavenging from humans. These animals may pose some threat to human safety, can be vectors for disease and their presence can become a constant nuisance. Moreover, their reliance on human food is a detriment to their own wellbeing.

Human foods and products are harmful to wildlife because they would otherwise forage and eat a nutritious diet derived from their natural environment. Serious illness or death can occur when wildlife consumes foil food wrappers, plastics, and other inedible materials

Animals are adept opportunists. When offered the temptations of an untidy camper's kitchen or a well-meaning handout, they can overcome their natural wariness of humans. Consider suspending food bags to discourage Quolls and Possums. Aggressive or destructive behaviour may occur if an easy target is left, and in conflicts with humans, animals ultimately lose. Prospects of a meal also lure wildlife into hazardous locales such as campsites, starts of tracks, roads and entry points, where they can be chased by dogs or hit by vehicles. They may also congregate in unnatural numbers, increasing stress and the spread of disease within their populations.

Store food and rubbish securely

"Food" includes rubbish, canned food, stock feed, pet food, fuel and scented or flavoured toiletries. The salt in hiking boots, backpacks or clothing also attracts many small mammals. Rubbish bags needed to be secured out of reach of foraging animals in order to maintain their purpose. Appropriate storage and transportation methods vary considerably from place to place, so consult local land managers about the best practices. Food and rubbish might be hung or placed in an animal proof container for protection. Also, take care not to drop food on the track and keep a clean camp by removing all rubbish and even the tiniest food scraps

Control your pet

Wildlife and pets are not a good mix—even on a leash, dogs harass wildlife and disturb other visitors. The best option is to leave them at home. If you must travel with your pet, check for restrictions in advance. **National Parks, Conservation and Nature Reserves prohibit dogs.**

Obedience champion or not, every dog is a potential carrier of diseases that infect wildlife. Ensure your animal is in good condition for the trip. Dogs should have current vaccinations to avoid being carriers of or contracting infectious diseases, especially in areas with dingo populations.

Always use a collar and a short leash to control your dog. Remove pet faeces from tracks, picnic areas, and campsites by disposing of it preferably in a cat hole, as you would human waste, or if necessary in a rubbish can.

BE CONSIDERATE OF YOUR HOSTS & OTHER VISITORS

Today, we must consider the rights of traditional landowners as well as share natural and cultural places with people of all recreational persuasions. There is simply not enough country for every category of enthusiast to have exclusive use of land, tracks, bush, lakes, rivers, and campgrounds. Yet the subject of outdoor “etiquette” is often neglected. We’re reluctant to examine our personal behaviours, least of all in natural and cultural heritage places where, to many, a sense of freedom is paramount.

Respect Cultural Owners and their Country

Welcome to country – through out northern Australia you will be on the traditional lands of Indigenous people. Customary Indigenous practice involves welcoming people to the land. Part of accepting this welcome is for you to respect the land and its people. Check with local or state authority for requirements.

When entering traditionally owned land it is sometimes necessary to obtain a permit (well in advance) but at the very least, it is extremely respectful to ask permission to travel on their country. Show your respect to Indigenous people whose communities and outstation camps often support a traditional lifestyle. Be friendly, unobtrusive and self-sufficient. Always ask about appropriate behaviour particularly if you are intending a visit near sacred sites. Sometimes there are local cultural protocols where special requirements apply to men and women, children and adults.

Respect the community’s story associated with a particular site. Recognise, acknowledge and respect local knowledge. Knowledge held by locals and Indigenous custodians is part of their heritage.

Always “Ask First”. Visitors are asked to respect the privacy of the people living in the communities they travel. While much is shared with visitors, some stories, songs, dances, artefacts, designs and photographs may be protected under law from copying or unauthorised reuse.

Also, take cues from Indigenous people. Allow them to set the pace and let your presence be noticed before engaging in conversation. Be aware that many Indigenous people speak English as a second, third or fourth language.

You will be welcome in Indigenous communities if you remember to respect the **THREE Rs**:

Relationship – spiritual beliefs connect different clans to the land and water of a particular area. This is a person’s “country”. The rights to country are held communally by the clan.

Responsibility – relationship to country carries important cultural and spiritual responsibilities, often called “caring for country”.

Respect – respect Indigenous knowledge and beliefs, which place cultural restrictions on stories or places due to gender, status or for ceremonial

reasons. Respect all sites of sacred, archeological or historical significance. Don't be afraid to ask about appropriate behaviour.

(*Aboriginal Tourism Australia 2004*, www.aboriginaltourism.com.au)

Respect all other land managers

In the Kimberley, land is leased by Pastoralists and managed by agencies such as CALM and the Australian Wildlife Conservancy. It is of utmost importance and respect to seek permission to travel on any land in this region. Follow regulations, signage and consult with the appropriate party. Never visit places where you have not obtained permission.

Respect other visitors and protect the quality of their experience

Other visitors to these areas also need to be considered. Respect the quality and enjoyment of their experience as well. Some people visit natural areas to enjoy quiet and solitude. Others come for camaraderie. Even the remote natural areas are under increasing pressure from being used. Do your best to find an established campsite, out of sight and sound of other visitors.

Maintain a cooperative spirit

Our interactions should reflect the knowledge that we can and do rely on each other when mishaps occur. More often than not, our experiences ultimately depend on our treatment of others and their attitudes toward us. Although our motivations and sense of adventure vary, there's always room on the track for people with open minds and generous hearts.

Yield to others

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

Be careful not to disturb the livestock or equipment of stations, farmers, anglers, beekeepers, miners and others who derive their income from the permitted use of public lands. Leave gates open or shut, as you find them. Respect and follow practices listed on posted signage.

Groups leading or riding livestock have the right-of-way on tracks. Walkers and bicyclists should move to the downhill side and talk quietly to the riders as they pass, since horses can startle easily.

Whether you are running, walking, or riding a mountain bike maintain control, politely announce your presence and proceed with caution before passing others.

Keep a low profile

Have rest breaks a short distance and out of sight from the track. These of course, should be taken on durable surfaces, such as rock or bare ground. If the vegetation around you is thick or easily crushed, pick a wide spot in the track so others can pass by. If possible, camp out of sight and sound of tracks and other visitors.

Let nature's sounds prevail

Avoid the use of bright lights, radios, electronic games, and other intrusive urban devices. If you must carry something that makes noise, carry earphones in order to keep the noise to yourself. To some, technology is a necessity even in the wilderness. To others, it is inappropriate. Avoid conflicts by making a conscious effort to allow everyone his or her own choice in experience.

Some outdoor activities are necessarily loud. As much as possible, try to keep the noise down, especially at night or in natural areas. Teach dogs to be quiet. Wear headphones to listen to music. Keep voices low. Use mobile phones discreetly. Most of all, tune in to the sounds of nature.

A FINAL THOUGHT

The most important thing to take with you is the right attitude - that is, the utmost effort to leave no trace of your visit. It is a gift to future visitors and a gift back to the environment you have been privileged to enjoy.

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Comments can be forwarded to:

Cameron@lnt.org.au or at P.O.Box 71, Cottesloe, Western Australia 6911



Leave No Trace Australia promotes minimal impact recreation and travel within natural and cultural heritage places both nationally and internationally through education, research and partnerships.

The Leave No Trace Center for Outdoor Ethics promotes and inspires responsible outdoor recreation through education, research and partnerships.



The mission of the National Outdoor Leadership School is to be the leading source and teacher of wilderness skills and leadership that serve people and the environment.