



Fires versus Stoves

The use of campfires, once a necessity for cooking and warmth, is steeped in history and tradition.



Some people would not think of camping without a campfire. Campfire building is also an important skill for every camper. Yet, the natural appearance of many areas has been degraded by the overuse of fires and an increasing demand for firewood.

The development of efficient, lightweight camp stoves has encouraged a shift away from the traditional fire. Stoves have become essential equipment for minimum-impact camping. They are fast, flexible, efficient, reliable, and clean burning, and they eliminate the need for firewood. Stoves operate in almost any weather condition, and they leave no trace.

Should You Build a Fire?

The most important consideration to be made when deciding to use a fire is the potential damage to the backcountry.

- What is the fire danger for the time of year and the location you have selected?
- Are there restrictions from the land managing agency?
- Is there sufficient wood so its removal will not be noticeable?
- Does the harshness of alpine and desert growing conditions for trees and shrubs mean that the regeneration of wood sources cannot keep pace with the demand for firewood?
- Do group members possess the skill to build a campfire that will leave no trace?

Lessening Impacts When Campfires Are Used

If building a fire cannot be avoided, camp in areas where wood is abundant. Choose not to have a fire in areas where there is little wood—at higher elevations, in heavily used areas, or in desert settings. A true Leave No Trace fire shows no evidence of its use.

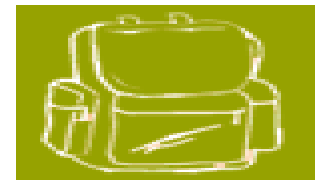
Existing Fire Rings

The best place to build a fire is within an existing fire ring in a well-placed campsite. Keep the fire small and burning only for the time you are using it. Allow wood to burn completely to ash. Put out fires with water, not dirt. Avoid building fires next to rock outcrops where the black scars will remain for many years.

Mound Fire

Construction of a mound fire can be accomplished by using simple tools: a garden trowel, large stuff sack, and a ground cloth or plastic garbage bag. To build this type of fire:

1. Collect some mineral soil, sand, or gravel from an already disturbed source. The root hole of a toppled tree or sand from a dry riverbed are possible sources.
2. Lay a ground cloth on the fire site and then spread the soil into a circular, flat-topped mound at least 6 inches thick.



The thickness of the mound is critical to insulate the ground from the heat of the fire. The ground cloth or garbage bag is important only in that it makes cleaning up the fire much easier. The circumference of the mound should be larger than the size of the fire to allow for the inevitable spreading of coals. The advantage of the mound fire is that it can be built on flat, exposed rock or on an organic surface such as litter, duff, or grass.

Fire Pans

Use of fire pans is a good alternative for fire building. Metal oil drain pans and some backyard barbecue grills make effective and inexpensive fire pans. The pan should have at least 3-inch-high sides. Elevate the pan on rocks or line it with mineral soil so the heat will not scorch the ground.



Firewood and Cleanup

- Standing trees, dead or alive, are home to birds and insects, so leave them intact. Fallen trees also provide bird and animal shelter, increase water-holding capacity of the soil, and recycle nutrients back into the environment through decomposition. Stripping branches from standing or fallen trees also detracts from an area's natural appearance.
- Avoid using hatchets and saws or breaking branches off standing or downed trees. Use dead and downed wood, which burns easily and is easy to collect.
- Use small pieces of wood—no larger than the diameter of an adult wrist—that can be broken with your hands. This practice avoids having to use a saw or hatchet, and the wood readily burns to ash.
- Gather wood over a wide area away from camp to avoid depleting the wood supply and to let nutrients return to the soil. Along rivers and seashores, use dry driftwood.
- Stop adding new fuel to a fire near the end of its use and toss in burned ends of wood. Allow the coals to burn to white ash, thoroughly soak with water, and scatter the remains over a large area away from camp. In river corridors, ashes may have to be packed out.
- When cleaning up a mound or pan fire, replace soil where you found it.
- Scatter unused wood to keep the area looking as natural as possible.
- Pack out any campfire litter. Trash should not be burned, especially plastic items and foil-lined wrappers, the remains of which stay in the firelay.

Safety

Certain safety precautions should be followed when handling fire:

- When using stoves or fires, follow BSA procedures for supervision of young people.
- Follow all manufacturer's product and safety labels for stoves.
- Use only approved containers for fuel.
- Build campfires well away from tents or tarps.
- Never leave a fire unattended.
- Keep wood and other fuel sources away from fire.
- Thoroughly extinguish all fires.



Activity Plan

Minimize Use and Impact of Fire: A Leave No Trace Activity Exploring Fire and Stoves

What Your Group Will Learn

After participating in an activity designed to study various options for fires, group members will be capable of:

1. determining if a campfire is a necessary component of camping.
2. assessing what areas can ecologically or aesthetically withstand another campfire with minimal impact.
3. building minimum impact fires in both high use and remote areas.



Participants are going to compare how fast they can heat water on a camp stove, camp fire and a mound fire. They will then assess the value of each cooking method.

Materials

- A backpack stove, fueled and ready.
- Three small pans for heating water.
- Water jug.
- Firewood small to large sizes.
- Mineral soil for a mound fire
- Ground cloth or plastic garbage bag to gather soil.
- Enough unscarred rocks to build 1) a traditional camp fire ring and, 2) for a base for the fire pan.
- Fire pan (metal garbage can lid, oil pan, or other fire pan substitute).
- Chocolate mix and cups for drinking.
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Preparation

- Locate an area that will permit the group to safely and responsibly build fires.
- Read the entire lesson plan and Background Information thoroughly. It is necessary for group members to know how to use a fire pan and how to build a mound fire before beginning this activity. This activity should take approximately 60 minutes to complete.
- Practice building a mound fire prior to the meeting so you are familiar with the process.
- Scatter the unscarred rocks and fire wood over the surrounding ground.
- Place the soil for the mound fire nearby.

Grabbing Your Groups Attention: 15 minutes

Explain to the group that there are three ways to prepare food for camp meals: pre-made cold meals, meals cooked over fires, or meals cooked on a camp stove. Group members are going to compare the value of stoves and fires when making hot chocolate. But first, they will help the leader demonstrate how to build a true Leave No Trace fire.

Demonstrate how to build a mound fire. See 'Building Fires' below. Use group members to help you gather soil, fire wood, and clean up when you are through. Help participants understand how a properly built mound fire leaves almost no trace of the fire. The entire process of building the mound fire, extinguishing the fire, and cleaning up should be limited to about 15 minutes.



Steps for Teaching the Activity - 30 minutes

The Heat Is On: Participants are going to compare how fast they can heat water on a camp stove, a fire built using a fire pan, and a traditional camp fire. After heating the water and making their chocolate, group members will attempt to remove all evidence of the fire (e.g. traces of ashes, dirt, firewood, etc.). This process will help participants think about the advantages of stoves, mound fires, or fire pans over traditional campfires.

Explain to group members that they are going to conduct an experiment to demonstrate the pros and cons of fire use. Divide the participants into three groups. Each group will:

1. prepare a fire source
2. boil water and make hot chocolate
3. clean up the site so no one can tell they have been there.

Ask one group to use a stove, one a fire pan, and one a new rock-ring fire. Have each group keep track of how long it takes to prepare the chocolate and clean up the site.

Note: It will be necessary to supervise the groups as they light the stove and construct the campfires from the materials you have provided. Read the Background Information and instruct the fire-pan group on the proper way to build a pan fire.

Time Out for Discussion: Leaving no trace does not simply mean putting out the fire and cleaning up the trash. There should be no evidence that the fire ever existed. Here are points to remember when using and discussing the activity:

- Make it a special challenge to Leave No Trace.
- Is the ground scarred?
- Is there evidence of charred wood? All campfires require crushing coals to ash, soaking with water to eliminate fire danger, and disposal of the ash (even fires built in existing and properly located fire rings should be cleaned)
- Are there scarred rocks?
- Is soil noticeably disturbed in and around the cooking site?

Which method of boiling water was fastest? The stove will most likely be the fastest method of boiling water. Fires require more preparation time, especially if proper care is taken to Leave No Trace. Which method would the group prefer if they were very hungry, it was raining, or they were camped on rocky terrain where a fire was impractical?

What problems arose during clean up? How successful were the fire builders at leaving no sign whatsoever of their fire?

Results

A true Leave No Trace fire should leave virtually no sign of its existence. Did the fire builders meet this standard? Ease of clean up will generally follow this order:

- Easiest: stove. Stoves require virtually no clean up when used properly.
- More difficult: fire pan. The pan fire, set on rocks or some other suitable surface, will not damage the land, but will still require disposal of ash.
- Most difficult: traditional rock fire ring. Traditional fires will scar the surface upon which they were built, requiring reclamation of the fire site. These fires are usually built with rocks which become permanently scarred. Did the group take the time to wash soot off rocks?

Wrapping Up the Activity - 15 minutes

Your group has had the opportunity to experience and discuss the benefits and procedures for building different types of fires. How well have they learned to minimize their impact with fires?

- Summarize the advantages and disadvantages of campfires and backing stoves.
- Can the group describe the preferred techniques for building a fire in high-use areas?
- What are some of the no-trace fire building practices in pristine areas? n What are some ways to enjoy the night without a campfire? (Stars more no able, might hear small animal sounds more easily, the darkness enhances story telling...)

Congratulations on conducting a well-prepared meeting for your group!



Building the different fire types

Existing Fire Rings: The best place to build a fire is within an existing fire ring in a well-placed campsite. Keep the fire small and burning only for the time you are using it. Allow wood to burn completely to ash. Put out fires with water, not dirt. Dirt may not completely extinguish the fire. Avoid building fires next to rock out crops where the black scars will remain for many years.

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- Avoid using hatchets, saws, or breaking branches off standing or downed trees. Dead and down wood burns easily, is easy to collect and leaves less impact.
- Use small pieces of wood no larger than the diameter of an adult wrist that can be broken with your hands.
- Gather wood over a wide area away from camp. Use dry drift wood on rivers and sea shores.
- Burn all wood to white ash, grind small coals to ash between your gloved hands, thoroughly soak with water, and scatter the remains over a large area away from camp. Ashes may have to be packed out in river corridors.
- Replace soil where you found it when cleaning up a mound or pan fire.
- Scatter unused wood to keep the area as natural looking as possible.
- Pack out any campfire litter. Plastic items and foil-lined wrappers should never be burned in a camp fire.