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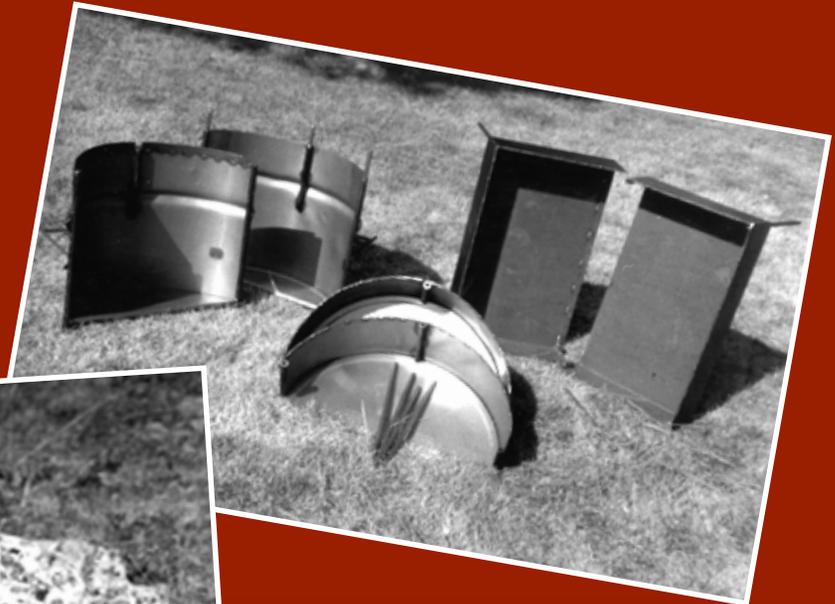
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Lightweight Firepans

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Leave No Trace Campfires and Firepans



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Introduction

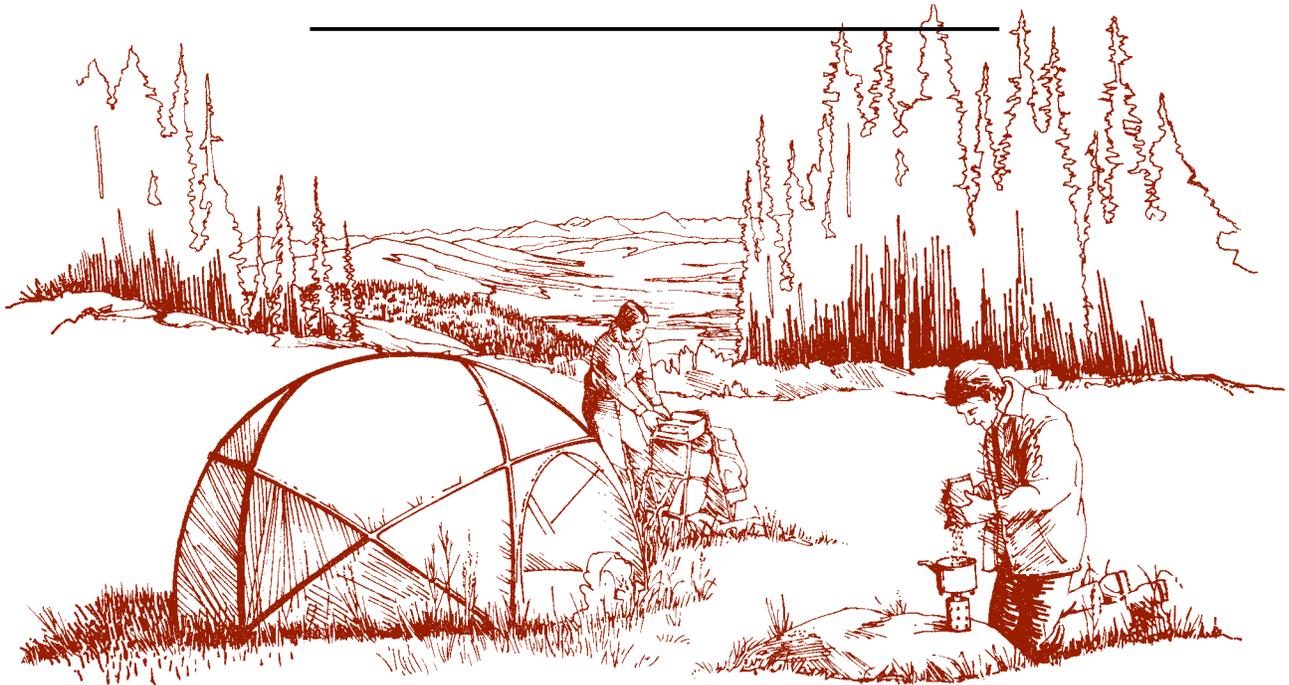
A firepan is a metal tray or pan that elevates a campfire off the ground, reducing the fire's environmental impacts. The Missoula Technology and Development Center (MTDC) was asked to develop a portable firepan to minimize the impact of large campfires. We wanted a sturdy firepan that would be inexpensive, be

compact and lightweight enough to carry on packstock, and simple enough to be constructed at home and ranch metal shops. We designed and built three different prototypes, all of which worked.

In addition, we tried out other products and techniques designed for smaller

campfires. They all worked well. One product, the *Fire Blanket*, worked well for small and large fires, and could substitute for the large firepans we fabricated.

These products and techniques allow campers to enjoy the benefits of their campfires without leaving a trace.



Leave No Trace Campfires

We've all seen ugly campfire rings: rings of rocks, unburned pieces of wood, heaps of ashes, metal and glass, and scorched rocks. These impacts degrade pristine settings and natural environments (Figure 1). Additional impacts include "beat out," compacted areas around campfires, limbs broken off all the trees in the vicinity, sterile soil underneath the fire, and a general scarcity of firewood throughout the area. There may even be metal from melted beverage cans and other debris under the fire pit.

Leave No Trace, a nationally recognized outdoor skills and ethics program, encourages all campers to minimize the impacts of campfires in the outdoors. Using firepans and fire blankets can greatly reduce the resource damage associated with campfires.

The best way to minimize the effects of your campfire is to do without. Small gasoline or propane stoves are handier for cooking in most cases. At cold-weather hunting camps, wood stoves for wall tents provide far more warmth than you'll ever get from a campfire. Open fires are not permitted in many fragile environments or during periods of extreme fire danger (Figure 2).

If your heart is set on having a campfire in high-use areas, use an existing fire ring if there is one. That prevents additional damage. In more remote or pristine areas—where there is no fire pit—**Do not** build a ring of rocks. Instead, select a naturally durable surface, like a rocky area without



Figure 1—Avoid building campfires that leave scorched rocks, heaps of ashes, compacted sites, unburned wood, metal, and other debris behind.

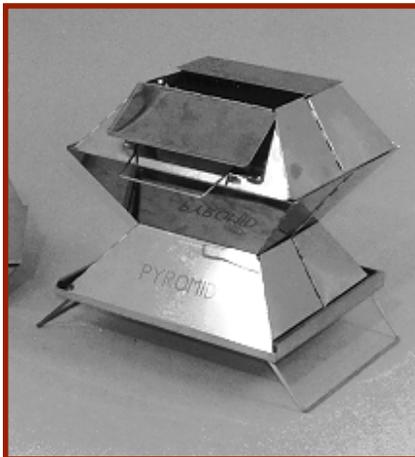


Figure 2—This enclosed *Pyromid* stove can burn wood or charcoal as a low-impact alternative to a campfire. Gasoline or propane stoves have even fewer impacts.

vegetation. Then build a mound fire or use a firepan.

For fuel, use only dead wood that has already fallen down. Small material that is no larger than an adult's wrist, burns more completely. Reduce the effects of gathering firewood. Stubs from broken branches, hacked-off stumps, wood chips, and unscattered sawdust detract from the naturalness of the landscape.

Keep the fire small. Bonfires are for football rallies, not for camping. Even large, social groups will not have huge roaring bonfires if they truly care about preserving the integrity of the natural setting.

Mound Fires on Fire-Resistant Pads

Mound fires are a good way to go. The concept is simple. The campfire is built on top of a fire-resistant pad and a flattened pile of mineral soil. Mineral soil is sand, dirt, or gravel without a lot of organic material. Organic materials, often found in the top layer of soil (especially heavy in dark-colored, musty-smelling “bog” soil), will dry out and burn. Peat moss is an example of organic material; peat soil is used as fuel in some parts of the world.

To build a mound fire, place a fire-resistant cloth on the ground, then place about 2 inches (50 mm) of soil on top of the cloth. Collect mineral soil from an area that has been disturbed, such as the hole at the base of a fallen tree (Figure 3). The cloth and dirt base need to be larger than your fire, so rolling embers will remain contained. Build your campfire on top of the dirt (Figure 4). After the fire is completely out, put on work gloves, rub the ashes out, and scatter the ashes away from the campsite. There should be little or no evidence of the fire.

The *Fire Blanket*, made of heat-treated fiberglass with *Kevlar* stitching, worked well in limited testing (Figure 5). With about 2 inches (50 mm) of soil on the blanket, there was no evidence of damage either to the fabric or the vegetation beneath after a 3-hour fire. We did not test the product for more than 3 hours, but expect that some vegetation would be smothered over time. A better practice is to place the blanket where there is no vegetation, or to move it before any vegetation is smothered. The *Fire Blanket* comes in four sizes: 18 by 18 inches (457 by 457 mm), 2 by 2 feet (610 by 610 mm), 3 by 3 feet (914 by 914 mm), and 3 by 5 feet (914 mm by 1.5 m). The larger sizes should handle as large a fire as you should need.

We also tried fire shelter fabric beneath the fire (Figure 6). With a 2-inch (50 mm) soil covering, it also worked fine. Discarded fire shelters are a potential source of this material for Agency

employees, but not for the general public. They are lightweight, but have a tendency to crack after being folded many times.



Figure 3—Good places to dig mineral soil are under the rootwads of overturned trees or in dry streambeds.



Figure 4—With fire-resistant cloth and at least 2 inches of mineral soil, you have the ingredients for a mound fire. To further reduce impacts, build the fire on a spot without vegetation.



Figure 5—The *Fire Blanket* worked well. The 3- by 3-foot size weighs only 24 ounces.

Neither the *Fire Blanket* nor the fire shelter will withstand sustained direct fire. They need to be covered with soil. Having a fire-resistant cloth under the mound does help immensely in cleaning up the site and restoring its original condition.



Figure 6—Fire shelter fabric also works when building mound fires, but the fabric has a tendency to crack after being folded a few times.