

BACKPACKING EQUIPMENT LIST-- [Non-Winter] -- bring packed to shakedown

Consider borrowing equipment you don't already own. Everything must be packed in. Keep weight down; bring as little as possible but be sure to bring essentials. Total pack weight is not to exceed 25% of body weight. All clothes, sleeping gear and food are stored in waterproof bags.

[BB] = goes in bear bag, away from tent area.

[SD] = stored in sump or dining area away from tent area.

Basic Gear

<input type="checkbox"/>	Frame pack with hip belt
<input type="checkbox"/>	Pack cover (packs stay outside tent; heavy garbage bag OK)
<input type="checkbox"/>	Sleeping bag/blankets in waterproof (garbage) bag
<input type="checkbox"/>	Sleeping pad (optional)
<input type="checkbox"/>	Hiking Boots (stiffest high-top shoes) - not on ground at night
<input type="checkbox"/>	[BB if mix] Water bottles/canteen - 1 qt. for every 100 lbs. weight
<input type="checkbox"/>	Extra plastic bags for trash, dirty clothes, etc.

Camping/Hiking Gear

<input type="checkbox"/>	Map (supplied) in ziplock bag
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Clothes (wearing + packing)

<input type="checkbox"/>	Socks (2 heavy wool pairs, 2 liner pairs)
<input type="checkbox"/>	Shorts/pants (2) and belt
<input type="checkbox"/>	Shirts (2)
<input type="checkbox"/>	Underwear (2)
<input type="checkbox"/>	Sleepwear
<input type="checkbox"/>	Lightweight jacket or wool/flannel shirt
<input type="checkbox"/>	Poncho or rainsuit
<input type="checkbox"/>	Hat & bandanna
<input type="checkbox"/>	Sandles/light sneakers to relax in camp (optional)

Toiletries/Personal (BB items not used after 5:00pm)

<input type="checkbox"/>	[BB] Biodegradable soap
<input type="checkbox"/>	[BB] Toothbrush/paste
<input type="checkbox"/>	[BB] Sunscreen
<input type="checkbox"/>	[BB] Lip balm
<input type="checkbox"/>	[BB] Insect repellent (DEET)

Cooking & Eating

<input type="checkbox"/>	[BB] Food (suggestions below)
<input type="checkbox"/>	[SD] Spoon/utensils
<input type="checkbox"/>	[SD] Cup (preferably standard size for measuring)
<input type="checkbox"/>	[SD] Pot for heating water, etc.
<input type="checkbox"/>	[SD] Cleaning/scrub pad

Shared with buddy

<input type="checkbox"/>	Tent (novices avoid heavy and difficult-setup (Pinnacle) tents)
<input type="checkbox"/>	Ground cloth for under tent (recommended)
<input type="checkbox"/>	[SD] Backpacking stove & fuel
<input type="checkbox"/>	Water filter, iodine or chlorine
<input type="checkbox"/>	Light rope or twine (25 ft.) for lashing

Shared Crew Equipment

<input type="checkbox"/>	Bear bag
<input type="checkbox"/>	75-100 ft. rope
<input type="checkbox"/>	Shovel or trowel (for cat holes & sump)
<input type="checkbox"/>	[SD] Sump strainer

<input type="checkbox"/>	Compass
<input type="checkbox"/>	Pocket knife
<input type="checkbox"/>	Small flashlight with extra/new batteries
<input type="checkbox"/>	Whistle - accessible; not packed
<input type="checkbox"/>	[BB] Matches in waterproof container

<input type="checkbox"/>	[BB] Small first aid kit -- moleskin, bandages, drugs for medical conditions (allergies) or to self-administer (aspirin), copy medical form
<input type="checkbox"/>	Toilet paper in ziplock bag (unscented or goes in BB)
<input type="checkbox"/>	Watch
<input type="checkbox"/>	Money

<input type="checkbox"/>	[BB] "Yummy" bag (food not passing through strainer is packed out)
<input type="checkbox"/>	Dining fly (optional)
<input type="checkbox"/>	[BB] Repair kit - needle, thread, duct tape, zip ties, etc.
<input type="checkbox"/>	[BB] Crew first aid kit and medical forms

SOME SIMPLE FOOD SUGGESTIONS (links to other recipes & menus given below) -- bring menu and food to shakedown

Breakfast	Lunch/snacks	Supper
Oatmeal Cream of Wheat cold cereal (bring dehydrated milk) hot chocolate powdered fruit drink (Tang)	Trail mix Granola bars beef jerky/pepperoni peanut butter & crackers cheese & crackers	Ramen Noodles Lipton Dinners (may need cooking oil to substitute for margarine) cup-o-soups instant potatoes canned chicken/tuna



Bob's Backpacking Bits

Packing That Equipment



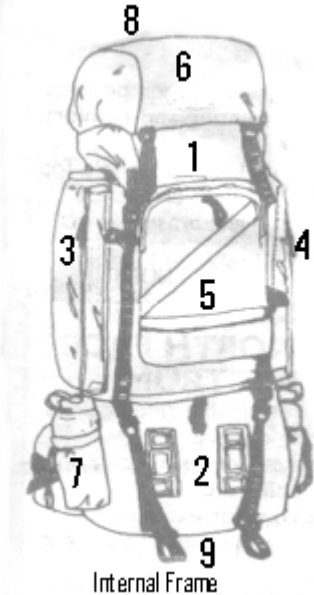
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There are lots of different ways and philosophies on where things go in the pack. What I suggest below is just one of those ways -- the one I use. When I first began backpacking I started with the suggestions of David Caffey (Chief Philmont Ranger 1974-1977) in an older Boy Scout Fieldbook. I have modified them to suit my liking and because today's packs are much different than the one illustrated there. You didn't see any internal frames back then and most packs didn't have sternum straps, load control straps, compression straps and integrated water bottle holders until a few years ago. Some didn't even have a padded hip belt, just a bare strap/belt. Pack technology is much better these days. [As an aside, those in State College may want to go to Appalachian Outdoors (<http://www.theadventuresource.com/>) and look at the "wicker basket" pack up on the wall.] I use rather recent versions of internal and external frame packs as illustrations. Internal and external frame pack designs seem to be converging, with external frames sometimes taking on nearly the same profile as internal frames -- tall and narrow with a lower (sleeping bag) compartment -- and internal frames adding many external pockets and places (web daisy chains and lash patches) to hang things off the top, sides and back outside the pack -- areas where external frame have traditionally excelled. External frame packs have also become more flexible with poly/PVC frames. Both have added mechanisms to adjust the shoulder strap position, a feature first found only on a few external frames. For example, at first look it is hard to recognize that the Kelty Appalachin or Pacific Crest are external frame packs. Similarly, I am impressed with the number and design of external pockets on the Camptrails Wind River -- besides a drawstring divider between the upper and lower main compartments, it has two contoured tunnel upper external pockets, a two compartment front pocket and a top pocket, and an optional Kitchen Sink Pocket (pun intended, I'm sure). The Kelty Red Cloud is very similar. These examples of the blending together of the "best" features of traditional external and internal frames designs should all but remove the debate -- you can "have your cake and eat it too".

Pockets and Compartments for Stowing Gear.



To the left and right are somewhat typical external and internal frame packs. As the name implies, the external frame (often looks like a ladder) can be seen from the back of the pack (the side against your back). The frame stays of internal packs are often two 3/4" to 1" wide flat aluminum bars 20" to 30" long sewn into the back of the pack itself. One main difference is that the sleeping bag and tent are often lashed to the outside of an external frame at points #8 and #9, while, internal frames are designed so that, all gear can either be stored inside the main compartments or in the outside pockets. The first internal frames and specialized climbing ones have fewer outside pockets and require that much of what should be accessible be buried inside the large main compartment. Sorry.



After you've decided on your list of backpacking equipment to carry, you'll need to pack for the trail. Before getting into the details of matching equipment to compartments and pockets, consider the following observations:

- Small, frequently used items should go in your pants pockets, "throw" pockets on the pack, hung from your shoulder straps, or placed in other readily accessible place. These include knife, compass, map, whistle and watch.
- Other items that need to be readily accessible to you or others should be in conspicuous outside pockets. These may include rain gear, first aid kit, sun and insect protection, trail snacks & lunch, bandana, some matches, toilet paper, digging trowel, and perhaps camera, binoculars and paper & pencil.
- Packing several small similar items together in heavy plastic (ziplock) bags organizes items that could get "lost" inside the pack and keeps the contents dry even if the pack gets soaked.

- Items that must be kept dry but are too large for ziplock bags, like a sleeping bag, should be placed inside a heavy plastic bag and the opening closed with a "gooseneck". Goosenecked heavy plastic bags should be used for items that must be kept dry but are too large for ziplock bags, like a sleeping bag. The gooseneck closure is formed by twisting the bag end, folding it over, then fastening it in place with a rubberband or twine. Note that, unless the bag is completely submerged, water would have to run uphill to get in.



- If a stuff sack lined with a plastic bag is going to be compressed further using webbing straps & buckles and the gooseneck twist is wound real tight, a small pin hole in the bag may be necessary to allow the air to escape unless the compression is done in slow incremental steps.
- Your water bottle should be easy to retrieve. The harder it is to drink, the more likely you are to get dehydrated.
- Equipment you won't need until you make camp can be buried deep in the pack, but reserve an outside pocket for isolating your fuel and any other "smellables" that might contaminate food, clothing, tent or sleeping bag.
- Assign each item a specific "home" in your pack so that it can be located quickly and always return it to that home.
- Normally, arrange the pack's contents so that its center of gravity (heavy gear) is high and close to your back. Compression straps can help. Where stability is vital, some comfort can be traded for the stability of a lower center of gravity by placing heavy gear in the bottom of the pack.

Now on to match-making. I will designate the pockets and compartments in the illustrations as follows:

1. **Upper Main Compartment.** It usually holds the bulky and heavy things (to keep weight over your skeleton). The external frame shown is "front-loading", meaning that it has a zippered door/flap that allows crewbies to place gear when the pack is lying down. The internal frame pack is "top-loading". The top pocket (#6) is swung off and all gear is loaded from the top like

putting groceries into a shopping bag. On most newer design packs, that compartment has a draw string at the top to close it before it is covered by the top flap/pocket. Some external frames are also top-loading. Top-loading main compartments are often quite a bit larger than front-loading main compartments. Basically, everything that doesn't go somewhere else gets "dumped" into here.

2. **Lower Main Compartment.** It is often called the sleeping bag compartment, after its usual contents in internal frames. Generally, this compartment is front-loading with a heavy zipper. Because my sleeping bag is put in a stuff sack and lashed on the outside (at #8 or #9), I use this compartment on my external frame for clothing. Many external frames (especially ones with top-loading main compartments and older designs) don't have this second main compartment, so more is stored in the upper compartment. Sometimes the two compartments have a removable (drawstring or zipper) separator and it is incomplete so that long things (like tent poles) can "passed-through" both compartments. Instead, sometimes one of the external side pockets is not fastened to the main pack at the top and bottom to allow tent poles to be "passed-behind" or "tunnel" it to rest in a lower pocket.
3. **Left Upper Pocket.** Because of accessibility, this is a good place to put rain gear.
4. **Right Upper Pocket.** Because external pockets allow isolation of potentially contaminating items, this is a good place for the stove fuel bottle and other potential contaminants (toiletry articles) and things that can be washed if contaminated (cat hole/sump trowel).
5. **Front Pocket.** It is sometimes called a "shovel pocket". Because of accessibility and its prominent visible position, this is a good place for important things like the first aid kit, tour permit and medical forms. It may also be a place for a camera and binoculars. Frames without this pocket often have a "top pocket" that can be used for the same purpose.
6. **Other External Pockets.** They may include the top pocket on a top-loading main compartment (#6 of internal illustration), lower external pockets (lower-left #6 of external illustration) and elasticized throw pockets (middle #6 of external illustration). Except that I wouldn't put the fuel bottle or other contaminants in a top pocket for fear of contaminating the contents of main compartments, they can be used to distribute the contents of #3, #5 and #6. The lower left pocket is where I keep my compass, flashlight, zip locked toilet paper and iodine bottle.
7. **Water Bottle Holder Pockets.** Sometimes they are specifically designed for this function. Other times extra external zippered or elasticized pockets can be used. Some packs have the bottle pockets near the top where #3 and #4 are pictured, with these pockets positioned lower. This provides "over-the-shoulder" access instead of "under-the-shoulder" access. Both work. If none of these are available, bottle bags [\$4 in Campmor] or canteen holders with belt loops or clips [Army surplus stores] can be used on the hip belt.
8. **Top Lash Points.** These points are often used for sleeping bags (in stuff sack), sleeping pads, tents (in bag) and ground cloths, especially on external frames (as pictured). The same purpose can be achieved by placing things between the top pocket (#6 of

internal illustration) and the top-loading upper main compartment (#1 of internal illustration) and tightening the fastening straps. I don't recommend this if you don't have a drawstring on that compartment.

9. **Bottom Lash Points.** They serve the same purpose as those on top.

Where I Pack My Gear

<p>Upper Main Compartment (#1)</p> <ul style="list-style-type: none"> • Cookware -- utensils, cup, cleaning pad, dish towel and stove inside cook kit, all in stuff sack • Food and matches in ziplock bags stowed in a stuff sack used only for "smellables" • Toiletries in bag -- sunscreen, lip balm, insect repellent, biodegradable soap, toothbrush & paste, bathing towel, emergency coins • Bear bag and rope (lashed on outside if soiled) • "Yummy bag" and sump strainer in plastic bag • Extra garbage and ziplock bags • Water bag or collapsible container 	<p>Lower Main Compartment (#2)</p> <ul style="list-style-type: none"> • Complete change of cloths -- light "liner" socks, heavy wool socks, underwear, pants, shirt, each "rolled" & sealed together in gallon ziplock bag (wear other set) • Clothing appropriate for the season in gallon ziplock bag(s) -- gloves, ear muffs, other hat (wear brimmed felt hat), wool/flannel shirt, sweater or coat • Camp footwear (if not hung on exterior compression strap) 	<p>Left Upper Pocket (#3)</p> <ul style="list-style-type: none"> • Rain jacket or poncho • Pack cover
<p>Right Upper Pocket (#4)</p> <ul style="list-style-type: none"> • Stove fuel bottle in ziplock bag • Matches (spares) and fire starters in waterproof container 	<p>Front Pocket (#5)</p> <ul style="list-style-type: none"> • First aid kit and personal medicines • Bandana (with first aid kit) • Camping/tour permits 	<p>Other External Pockets (#6)</p> <ul style="list-style-type: none"> • Lower Left Pocket <ul style="list-style-type: none"> ○ Flashlight ○ Regular compass

<ul style="list-style-type: none"> • Repair kit -- duct tape, sewing kit, tent pole sleeve, zip ties in ziplock bag • Light rope or twine • Trowel for digging sump, cat holes 	<ul style="list-style-type: none"> • Medical forms • Maps inside ziplock bag (usually in pants pocket) • Pencil and paper, diary • Advancement, training materials 	<ul style="list-style-type: none"> ○ Pocket knife & watch (if not in pants pocket) ○ Toilet paper in ziplock bag ○ Iodine • Shoulder Strap Pouch <ul style="list-style-type: none"> ○ Camera ○ Binoculars • Whistle and mini compass hang from shoulder strap
<p>Water Bottle Holders (#7)</p> <ul style="list-style-type: none"> • Two 1 qt. Lexan water bottles -- one for "clear" water, other for "mix" 	<p>Top Lash Points (#8)</p> <ul style="list-style-type: none"> • Tent, stakes, poles and ground cloth rolled together inside tent bag 	<p>Bottom Lash Points (#9)</p> <ul style="list-style-type: none"> • Sleeping bag in plastic bag inside stuff sack • Foam sleeping pad wrapped around stuff sack

Shakedown.

A scout or crewbie is always prepared. And, one way to make sure is to have a pack shakedown. This is especially true for inexperienced backpackers, but is also useful for everyone, since what you leave behind can't be retrieved and whatever you take will burden you. Even those experienced scouts who go to Philmont are subjected to dumping their pack contents onto their bunks and having a ranger comb through it with them. So, even more important is it for the novice. Bring your equipment checklist to the shakedown.

How do shakedown work? The crew gets together a day or two before departure on a trek/tour and each spreads all equipment, clothing, and provisions on a table, bunk, floor or ground cloth. Each item is considered carefully. Is it necessary? If so, it is put in one pile. If not, it is put in a separate pile (to be left home). Each item on your list is checked off to be sure all the basics but nothing more is in the "keep" pile. It helps to pair off in "buddies", for one to call out each item on the list and for the other to hold that item up. The first then checks it off. Then they switch roles. Buddy newbies with experienced crewbies, so they can offer advice. After going through everything once, go through it again. Finally, take one last look through the pile designated to stay home. If you aren't already at maximum pack weight, you may decide that some of the items could make your trip more pleasant. If you are like me, the answer may be yes for a book, binoculars, or a camera, but remember that ounces add up quickly. An ounce in the morning feels like a pound at night. The more thorough your shakedown, the lighter your load.

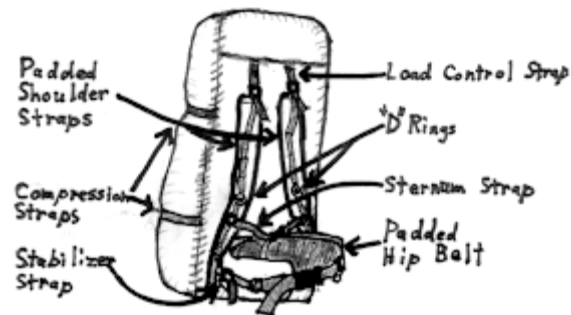
Another interesting concept is to do a shakedown after you get back from a trek, to remove items that you didn't need and won't pack again. The more experience crewbies get, the lighter their pack is likely to become.

Total Pack Weight.

How much a crewbie's pack weighs depends on the length of the trek, the food and equipment you **must** carry, and your personal preferences for optional (luxury) items. Traveling with a crew allows tents, food, cooking gear, and other crew gear to be divided. The amount of weight that a crewbie **can** carry depends on a lot of physical factors (size, physical condition, age, experience) and terrain. Former Philmont Chief Ranger Caffey suggested that a pack weighing up to 20% of body weight usually can be carried pretty well. A useful rule I've seen and adopted is that MAXIMUM packing weight not exceed the greater of 20 lbs. or 25% of body weight [That is 20 lbs. up to 80 lbs.; 25 lbs. for 100 lbs.; 30 lbs for 120 lbs.; 35 lbs. for 140 lbs. 40 lbs. for 160 lbs.; above 40 lbs -- get real and repack; much higher and you should leave the kitchen sink at home.] Remember that these are maximums and many crewbies may struggle at these weights. I would aim for Caffey's 20%. This weight includes food and full water bottles. A large hand-held fish scale is what I use to measure crewbies' pack weight. In almost all excess weight cases, nonessential items can be found to be left behind or shared/crew gear can be redistributed to bigger, stronger, more experienced crew members. Remember, excessive weight and the resultant fatigue from overexertion can lead to lose of fun, irritability, and injuries.

Straps for Comfort and Control of Your Pack.

One of the biggest advances in pack technology has been the addition of helpful functional straps.



- **Padded Shoulder Straps** go from the pack just behind/below the top of the shoulder, over the shoulder, and back down to the pack somewhere near the hip belt (bottom). When crewbies experience sore shoulders it is often because too much weight is being carried by the shoulders -- the shoulder straps are lifting the weight off the hip belt. Two remedies are (1) loosening the shoulder straps, and (2) changing the position where the straps attach to the pack. If loosening the straps causes the pack to "fall away off the back" and the straps attach to the pack well below your shoulders, the pack (or adjustment) may be too short for your torso length and the shoulder straps could be moved up on the pack (or some allow the hip belt to be moved down). If it "falls away" and the straps attach above your shoulders, you may need to move them down (move the hip belt up) on the pack. The shoulder straps should attach to the pack just below shoulder level. Another potential remedy for the "falling away" problem is to tighten the load control straps, if the pack has them. If problems persist and you are out of adjustments, a different pack may be necessary.
- **Sternum Strap** goes from one shoulder strap to the other across the chest. Not all packs have this strap, but one I find a near necessity. Sternum strap retrofit kits are available and a lashing strap *with a quick release buckle* from one shoulder strap to the other is a potential in-the-field substitute. This strap, when pulled tight, relieves the pressure of the shoulder straps on the arms and distributes the pressure across the chest. When crewbies experience numbness in their arms, it can often be relieved by tightening the sternum strap.
- **Padded Hip Belt** attaches to the bottom of the pack and goes around the waist. The weight of the pack should rest on your hips, not your shoulders. This requires that the hip belt be pulled fairly tight and that the shoulder straps not lift the pack. The shoulder straps should mostly just keep the pack from falling backwards off of the back. To demonstrate this with younger scouts I sometimes lean a little forward and pull my arms completely out of the shoulder straps while walking down a smooth trail. This is a demonstration that makes the point and is not quickly forgotten. Newbies should not try this!

- **Stabilizer Straps** go from the sides of the hip belt to the pack on internal frames (and some external frames). They are needed because the "block" of padding at the bottom of the pack rests on the hips just above the tail bone. It also provides a nice fulcrum for the pack to rock on as you walk, which causes instability. By tightening these straps, the pack is restricted from side-to-side motion.
- **Load Control Straps** extend from shoulder straps just in front of the shoulder to the top of the pack. Not all packs have these. When pulled tight, they pull the pack weight in close to the shoulders. When loosened, they allow the pack to "fall off the back". These are useful features on steep and/or rocky climbs. Tightening them while going up hill brings the weight in closer so you don't need to bend over quite as much to maintain your balance. Going down hill, you may want the weight to be off the back (straps loosened), so that if you stumble, you fall backward against the hill rather than forward down the hill.
- **Compression Straps** generally go horizontally around the main compartment of external frame packs from the edges of the pack near the frame, or the frame itself. They serve two purposes. First, if you have a "front-loading" pack with a zipper flap opening [like the traditional "bookbag" pack], they relieve stress off the zipper, so it is very important that you snug them. Some internal frame "rucksacks" and "daypacks" also are front-loading. Especially with heavy firm loads, zippers can rupture and spill the guts of your pack. The one I use every day to hike to the office is such an internal frame and will rupture the zipper with heavy books if the compression straps aren't snug. Second, the straps keep the contents from shifting and help organize the weight. Without compression straps, the contents of a large compartment will be loose and always settle to the bottom (yet we usually want weight high and close to the shoulders). The compression straps constrict the compartment's diameter, forcing the contents to stay higher. Think of it like squeezing the middle of a tube of toothpaste to get contents out the top. Large compartment top-loading internal frames are very analogous to the tooth paste tube example. Internal frames may have zig-zag compression straps (or elasticized "bungies") on the two sides or across the front. You will usually only find the zig-zag straps on climbing or "small contour" packs because they are just where the external pockets usually are. Their purpose is also to squeeze up and secure the contents. Some internal packs already have tall narrow profiles, so squeezing up the contents is not as crucial, but holding the contents steady is still important. They may have vertical compression straps running up and down almost the length of the pack. These straps relieve the pressure off the lower (sleeping bag) compartment zipper, secure the top cover, and compress the contents down to make the pack more stable. They sometimes are left long at the bottom so that they can double as lashing straps for securing things external to the pack.
- **Load Lifting Straps** (not shown in illustration) are appearing on higher end internal (and a few external) frame packs to keep them from sagging and close to the torso. They attached to the bottom of the shoulder strap and to the bottom/side of the pack and are designed to lift and snug the lower part of the pack into the lumbar area of the back. This is not just a shoulder strap length adjustment as on many packs but specifically designed for this function.

- **Loosening Straps in Unsure Footing** allows you to jettison the pack if you falter. Your pack can be shed quickly, if the hipbelt and sternum strap buckles are disconnected, by simply lowering/relieving your shoulders. This was something they taught us at Philmont for walking logs across streams/rivers (like at Fish Camp).

Hoisting the Pack Onto Your Back

The best way to learn how to get the pack onto your back without straining is to watch experienced backpackers do it, then practice imitating them. The first time, do it with an empty pack, then work yourself up to the full weight you will carry. At the beginning or when the pack is heavy, it helps to loosen the shoulder straps a little. I bring the pack up to rest on my knee/thigh/hip with the back (strap side) facing me, then lean it to one side. I slip the closest arm through the shoulder strap and, with a smooth motion, swing it around behind me, reach down and catch it by sliding the other (free) arm through the other (free) shoulder strap. A couple of small jumps or jiggles allows me to position it squarely high on my shoulders (for stability and so that the hip belt is above my hips). Then I clip the hip belt, followed by adjusting the shoulder straps and fastening the sternum strap.



Tooth of Time Ridge, Philmont

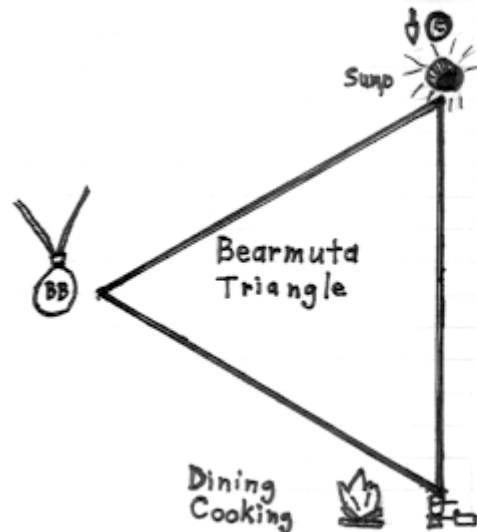


Bob's Backpacking Bits Camp Layout and Setup

(Bearnuta Triangle)



The primary objectives of laying out camp are to find a safe sleeping area and to leave as little trace that you were there as possible. This means respecting wildlife that might be interested in your "Bearnuta Triangle" and insuring that you don't contaminate ground water or leave anything behind. The Bearnuta Triangle is formed by the (1) the fire ring & cooking (dining), (2) the bear bag, and (3) the sump (cooking waste water) "smellable/bear areas". [The [Backpacking Equipment List](#) indicates which items are stored in the bear bag [BB] and sump or dining areas [SD].] The tenting area should be safely outside this triangle because animals are likely to travel between these areas, and crewbies don't want to be in their path. To prevent being a bear lollipop, no food should EVER be in the tent, packs (with cover) should be hung outside, and a sleeping bag stuff sack or tent bag NEVER used as a bear bag. Shoes should not be left on the ground. Actually, in the Pennsylvania mountains, bears are not the only "critters" to guard against. Crewbies may encounter rac oons, porcupines and skunks. All are attracted to smells or salt and can "maul" a pack. Below is a simple illustration of an appropriate camp layout.



Hey! If you think I'm a punk for being cautious or want to read more, check out the National Park Services (NPS) [Bears](#) and [Leave No Trace](#) pages, the USDA Forest Service (USFS) [Outdoor Fire Safety Tips](#) and [USFS -- Safe Campfires](#) pages, [USSSP -- Leave No Trace Principles](#), [USSP -- Low-Impact and No-Trace Camping & Hiking](#), a *Philmont Guidebook to Adventure* (PHL) or the "Wilderness Use Policy of the Boy Scouts of America" ([WUP](#)). Not surprising, since good safety procedures are pervasive, they agree in almost every respect. Here are a few guidelines from these sources:

- **Sanitation** -- Do not bathe or do laundry or dishes in or near a stream. Dig a 6-8 inch deep "cat hole" at least 200 feet from water, trails, or campsite in an organic (not sandy or rocky) site for fecal waste. After use, the soil is replaced. At Philmont they encouraged us to stir it with a stick to aid decomposition and to use the stick to mark the spot for other backpackers. Woman's sanitary items should not be buried; they should be sealed in an airtight plastic bag and packed out. Urinate on rocks and gravel well away from camp and water sources. Deer and rodents [and porcupines] are attracted to urine and sweat because of the salt. They do damage by pawing up soil to get at it and can chew holes in clothes, boots and camping gear. This is part of the reason not to leave your boots outside on the ground at night and to hang your packs. [A related problem in Pennsylvania is porcupines chewing on car radiator hoses and salt-treated lumber -- that is the reason you often find "moth balls" under cars at trail heads and attached to salt-treated lumber.]
- **Cooking and Fires** -- It is the cooking - dining - fire corner of the bearmuta triangle that often ends up closest to the tenting area. Food spills occur and they must be cleaned up by treating the spill like any other food -- putting it in the "yummy" bag and packing it out. Lightweight fueled stoves are more efficient and faster for cooking than fires, and they leave minimal impact. Always read and follow instructions provided by the stove manufacturer. Cool stoves before refueling, refuel them and store fuel away from where the stove will be lighted or used. Let any spillage dry before lighting. Never use stoves inside a tent. Open fires are usually discouraged, and sometimes prohibited. However, when a fire is built, **always check for and follow local regulations**. USFS and PHL note:
 - Fires should not be built near overhanging branches, slopes, stumps, logs, dry grass, leaves or firewood. Use an existing fire ring if available. Otherwise, dig a fire pit about six inches deep, keeping the sod intact for replacement. Scrape away any burnable material within 10 feet.
 - Have plenty of water handy and a shovel for throwing dirt on the fire.
 - Keep the fire small to reduce impacts and the danger of a wildfire. Start with dry twigs and small sticks, followed by larger sticks and logs, pointing them toward the center to be gradually pushed in. Burn dead and down wood only, and only that which is necessary.
 - Be sure your match is out, holding it until it is cold, then break it so that you feel the charred portion.
 - Never leave a fire unattended, even for a few minutes.

- Allow the fire to burn down to white ash; do not try to put a fire out by scattering it. Drown the coals thoroughly with water, stir the remains, drown it again, and stir again (where water is scarce, damp dirt and sand may also be used).
- Feel all materials with your bare hand to make sure it is "dead out". Make sure that no roots are burning. Do not bury coals--they can smolder and break out. A practice we learned at Philmont was to plant a dry stick in the ground in the middle to demonstrate the fire was "dead out".
- Only after the fire is definitely dead out, accumulated ash from the firepit is scattered away from camp.
- **Cooking Cleanup** -- Scrape off food scraps and seal them in an airtight plastic bag ("yummy bag"), store it with other food, and pack it out. The sump strainer is used to separate scraps from "gray/waste water". Wash dishes and dispose of "gray" water at least 200 feet (WUP) (NPS says 100 feet, PHL says 50 paces) from water sources. NPS recommends that gray/waste water can be disposed of in "vault" toilets [ones with concrete septic tanks] or that it be "broadcast" by throwing it over a wide designated area (otherwise designated the "sump" area). This is the "diffusion" philosophy; make a wide area only mildly "smellable". The other is the "concentration" philosophy used at Philmont; make one small area "smellable" so that you know where animals will be attracted. All gray water was put down a deep "sump" to be soaked into the ground away from the tenting area. Note the common safety features are that (1) only the most minimal food (that passing through the strainer) gets disposed, and (2) disposition of the gray water occurs away from the camping/tenting area. PHL warns against washing dishes near a water spigot because of possible contamination of ground water. Don't throw food, scraps or garbage/trash into "pit" toilets [ones which just use a hole in the ground], nor bury it, because bears and rodents will easily retrieve it. Do not burn trash, scraps or garbage, pack it out. [PHL doesn't rule out *thoroughly* burning food and NPS cautions that any food falling into the fire must burn to ash.] A bear drawn to a camp by the smell of buried food scraps or garbage in the firepit may begin to associate food with people, a lesson it will remember all its life. Then they have to be killed. As they drilled into us at Philmont: "Feed a bear - Kill a bear".

Always use biodegradable soap. [NPS discourages campers from using any soap, if possible, because even biodegradable soap will contaminate fresh water if precautions aren't taken.] Use a scrub pad to remove tough "cooked-on" parts. Once all visible food is removed, rinse dishes, pots & utensils in boiling water. Everything should be left to air-dry (even if "towel-dried" first) in the sump or dining area. These procedures guard against inadvertently contaminating your pack or its contents. Before each meal, sterilize dishes, pots & utensils for at least 30 seconds in boiling water -- to disinfect any contamination from packing, ground contact or airborne things "dropping in". Together, proper washing, rinsing and sterilizing will prevent diarrhea, dysentery and other ailments. [Anyone who has suffered from these on a backpacking trip takes cooking cleanup very seriously!]

- **Bear Bag** -- Hang ALL food and scented items at least 300 feet from your tent (downwind if possible), 10 feet above the ground and 4 feet from the tree trunk or any substantial limb. Bears' curiosity may attract them to any odor, even if it isn't food-related, so all "smellables" go in the bear bag. Avoid contaminating sleeping gear with food odors; do NOT use sleeping bag stuff sacks, tent bags, or clothing bags for food/smellables storage. NEVER eat or keep any food, or anything that held food, in your tent because the odor will linger [that means your backpack too!!]. Do NOT sleep in clothes with food odors; they should be hung like food. At Philmont, we kept separate clothes inside our sleeping bag just for that purpose and only those clothes and our boots remained in the tent. Besides making the smellables unattainable, hanging the bear bag diffuses the smell, making it somewhat harder for animals to pinpoint its source. [This is one reason, other than getting out of sightline, that hunters often use "tree stands".] There are bear-resistant canisters available, but bearbags are generally more practical for backpacking. Putting food etc., in cars is not an advisable alternative because bears can easily rip into a car. [For evidence of black bears' ability to "car clout" look up the article "Yosemite Bears Prefer Toyotas and Hondas For Late-Night Snacks," *Wall Street Journal*, January 13, 1999, pages A1, A8. by John Fialka.] In hanging the bear bag, tying a rock to the rope to weight it for slinging over a limb or cable can be dangerous if the rock comes loose or swings back; consider placing some sand or soil in a bandana, sock or small stuff sack (the size of a tent stake bag) instead -- it is softer if it does strike someone.
- **Water** -- Purify all water by using a portable water filter, bringing it to a full boil for one minute, or using water purification tablets [or liquid]. PHL recommends that even water that has been filtered should be boiled (most effective method) or treated using iodine to be effective in killing waterborne bacteria and viruses (giardia treatment time depends on water temperature).
- **Tenting** -- Pitch tents on high ground where they will not damage vegetation and do not dig trenches around them. Be careful not to camp too near to streams that could rise in a flash flood -- where the valley is narrow but drains a large area. Although you want to avoid low ground, you may want to avoid the tops of bald hills when there is the possibility of lightening. Sleeping inside a closed tent is preferable because it puts a barrier between you and rodents or other animals that may carry and transmit diseases and insects whose bite hurts or may stimulate an allergic reaction (insect repellent cannot be used in the evening because it is a "smellable"). Rodents are a problem at many camping shelters/grounds, because of the attraction of food remnants, and hantavirus pulmonary syndrome infections from Washington to Florida, California to New York have been linked to rodent bites and droppings. [Look up the article "Unwelcome Guests: Summer Vacation Spots May Lure Infected Mice," *Wall Street Journal*, June 21, 1999, page B1, by Marilyn Chase.] Ticks may transmit Lyme disease. Rodents are a primary food source for snakes, which are known to snuggle up to warm objects. [Reportedly, a lady hiking the Appalachian Trail awoke one morning to a tickle on her tummy, only to find that a Copperhead had crawled into her sleeping bag with her to take advantage of the warmth on a cool night. One of our scoutmasters found a skunk circling a boy who decided to sleep on the porch of a cabin along with his candy.] Most modern tents have good ventilation when the rain fly is left off on warm dry nights.

Every crewbie and scout should adopt standard *minimum* operating procedures based upon Federal, State and Local Laws/Regulations and Boy Scouts of America publications covering that particular trek/tour. These (for example, those applying to National, State or Local Parks/Forests or Philmont) may specify other more stringent procedures. But, if you aren't following safety precautions, and insisting that those with you do likewise, you are putting yourself, those around you, and those that follow you, at risk. A scout would not knowingly do that! We are responsible for "knowing". The "[Wilderness Use Policy of the Boy Scouts of America](#)" charges us to "[c]onduct pretrip training that stresses proper wilderness behavior, rules, and skills for all the potential conditions that may be encountered", to "[t]reat wildlife with respect and take precautions to avoid dangerous encounters with wildlife", and to "[e]mphasize the need for minimizing impact on the land through proper camping practices ...". Increasing the "knowing" part is a major motivation for this bit.

Now, here are a few "precautions-not-taken" bear stories. [I knew you were just waiting for them, so I saved them for last.] The day before we arrived at Philmont's [Miner's Park](#), a bear ripped into an unattended pack right in the campground during the middle of the day -- it had a candy bar buried deep inside. Just recently (July 2000), two scouts were scratched by a black bear in the [Mt. Phillips](#) area of Philmont Scout Ranch [[Mike Floyd's account](#); [Amarillo Globe article](#)]. My brother-in-law tells me that in south central Pennsylvania, where he lives, works and camps, sloppy campers have conditioned the bears so well to link food to campfires that shortly after starting a campfire it is not unusual to observe bears mulling around near the horizon. Our scoutmaster tells the story of a nephew's tent being visited at Scout Camp by a bear wanting to share his chocolate chip cookies. One of our older scouts observed a bear circling a truck containing food in a [Western Rim \(#34\)](#) of Pennsylvania Grand Canyon (north central) trail access parking lot -- our troop was camped nearby. Luckily, there was no "car clouting" that night. One advantage for campers of these "Eastern" black bears relative to the ones in some "Western" Parks is that the bold ones are also the ones likely to be harvested during hunting season [10 year average for PA is 1,800 per year with 110-130 per typical year in our (Centre) county alone (CDT, 12/5/99, p.2B)]. I enjoy seeing bears on outings (6 times so far), but not when they "get up close and personal" -- I almost got run over by a 350-400 lbs. one that had been "spooked" by others on a non-BSA outing. The moral is not that you should fear bears, but you **must** respect them.



Bear in Advisor, Asst. Smtr. Kathryn's Yard
[Read about [Black Bear Problems in Residential Areas](#)]

Related Resources:

- National Park Services (<http://www.nps.gov/>)
 - [NPS -- Bears](#)
 - [NPS -- Leave No Trace](#)
- USDA Forest Service (<http://www.fs.fed.us/>)
 - [USFS -- Outdoor Fire Safety Tips](#)
 - [USFS -- Safe Campfires](#)
- [USSSP -- Leave No Trace Principles](#)
- [USSP -- Low-Impact and No-Trace Camping & Hiking](#)
- *Philmont Guidebook to Adventure* (paper)
- [Wilderness Use Policy of the Boy Scouts of America](#)
- *BSA Fieldbook* (paper)
- **Advancement**
 - [Leave No Trace](#) -- Venturing Core Requirement for Ranger Award and Bronze Award
 - [Leave No Trace Awareness Award](#) -- Boy Scouts and Venturing