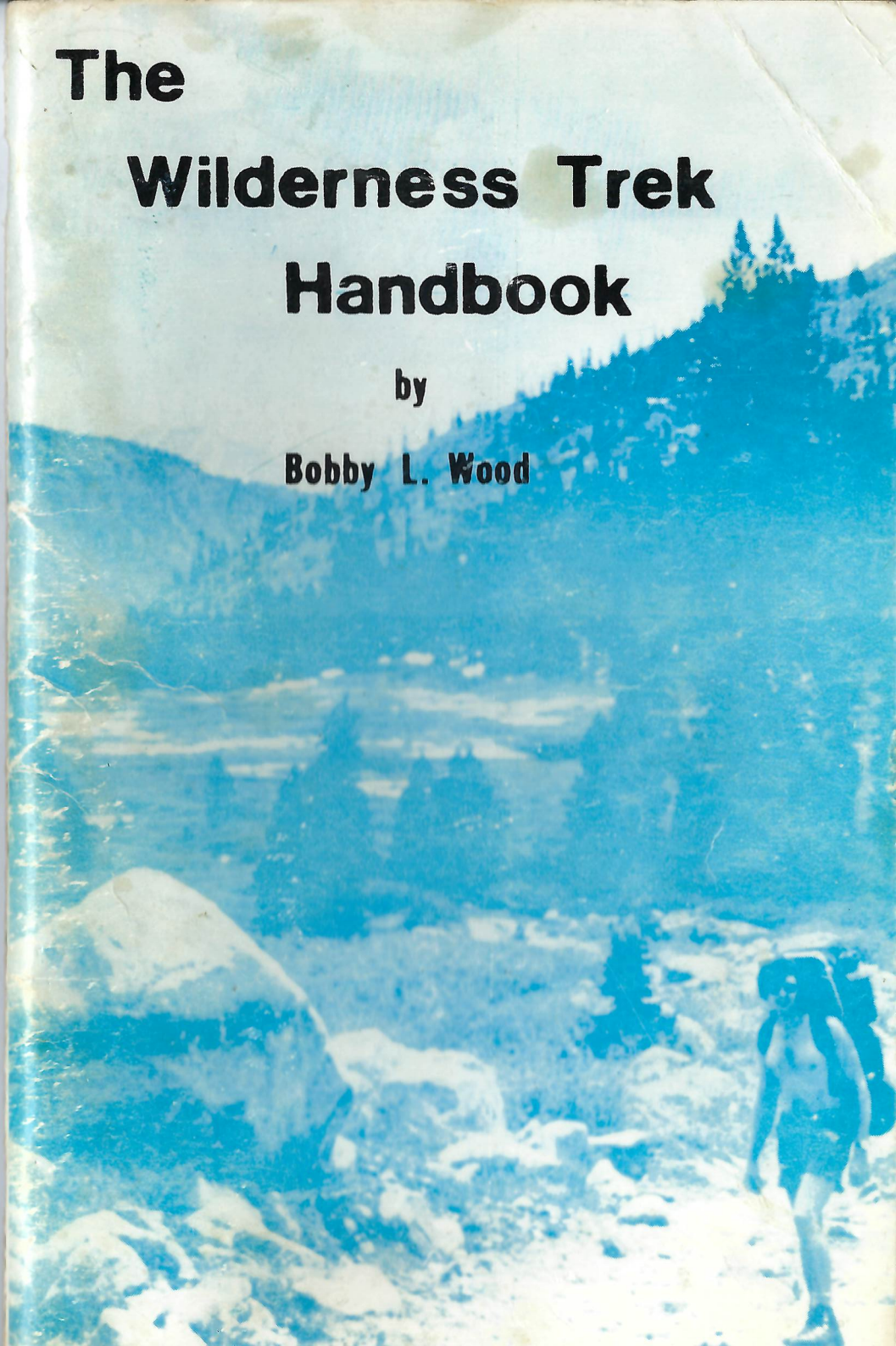
The Wilderness Trek Handbook

by

Bobby L. Wood



INTRODUCTION

If you want challenge, excitement, and adventure, then a "Wilderness Trek" is for you. Congratulations on your choosing to participate. The basic concept of backpacking into the wilderness is that through stress and hardship experiences, you will discover qualities about yourself that are basic to self-esteem and self-confidence. You will also gain an insight into some spiritual qualities which help a person look inward for self evaluation and upward for answers. Frequently because of the beauty of creation and the joy of experiencing it, one examines his purposes in living closely for the first time.

Life support of the trek begins at home. Months before you enter the wilderness you whould begin planning and training. Start an equipment list. List on a separate piece of paper things you need to do. Work out a schedule. List definite times to accomplish things. Set deadlines and work daily toward accomplishing your goals. "No one plans to fail; one simply fails to plan." The best mountaineers and backpackers lay careful plans and begin their conditioning program well in advance of their treks.

First of all, life support means that you must be able to pass a physical examination. After the examination get in shape and stay in shape. Steep rocky trails with 2,000 foot climbs in two to four miles are not unusual in some mountain ranges. Remember that you will be carrying a pack loaded with equipment, therefore breathing is difficult, especially at first. At least one day after arrival should be used to acclimatize. Jogging, running uphill, and hiking with full pack (properly balanced) are strongly recommended as part of your prior conditioning program.[1] This handbook stresses throughout the importance of physical conditioning. The reason for this is that if you are in good shape, the trek will be pleasant, and you will be less likely to encounter medical problems.

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[1]Appendix F

"Wilderness Trek" means getting out of the offices, schools, and concrete cities to spend some peaceful moments amidst the colorful creation of our natural resources. It means discovering how to live off the land with a minimum of equipment. It means learning skills of life support that adapt to everyday living. It means climbing against tremendous obstacles of mountain and weather to reach the summit. It means no goal is unreachable if one presses on with care, confidence, and faith. It means seeing the last ember die in a bed of coals, the remains of a fire kindled under difficult circumstances. It means life support in a contemporary world normally geared to easy living.

Backpacking into the wilderness is basically a way of living. The camper voluntarily cuts himself off from much of the usual interdependence of society. Other than the gear and provisions one carries, one is dependent entirely on himself and the others in his small group. People who participate in wilderness camping, backpacking, and other similar stress activities usually come home with a greater appreciation of their parents, school, home life, and society in general. The wilderness demands more of an individual's thinking, reacting, and working abilities too.

It is through the experiences of camping and related wilderness activities that people, especially the young, will truly appreciate the value of the resources of this nation. Hopefully, they may be rescued from becoming completely commercialized.

CAMPING AND HIKING PREPARATION

Weekend or backyard camping with your crew, or with family, is a good way to sharpen hiking and camping skills. This will allow you more time to enjoy the natural beauty and the program activities on the trail and in base camp. You also should begin a reading program. Check the bibliography and start reading.

Energy Management

Equipment selection

Like most outdoor sports, backpacking requires proper equipment. Without suitable equipment you will face unnecessary hardships. Please read the equipment list carefully and take only what you need. First, look around the house for suitable clothes and equipment. Next, buy other needed equipment with care and only after advice from the leader. Don't spend money uselessly. Below are listed some suggestions on clothing and equipment. After several overnight camps you should be able to conduct your own shakedown to eliminate items which you don't need. Remember that successful backpacking depends upon efficiency, lightness of equipment, and skill of its use.

Frame and bag

The lightweight aluminum or magnesium-alloy frame has been recognized by most expedition leaders as the best equipment for backpacking with medium to heavy weight loads. The frame is usually an "H" design curved to follow the natural contour of the back. The frame is held from the back by very tight nylon mesh backbands or webbing. This allows the frame to be carried high and comfortably against the shoulders. Additional features of the better frames are the wide-padded adjustable shoulder straps, and a padded hip belt or waist band to support the frame on the hips or to transfer weight between hips and shoulders.

Frame bags come in different sizes, colors, shapes, and styles. The proper selection depends upon the wearer's height

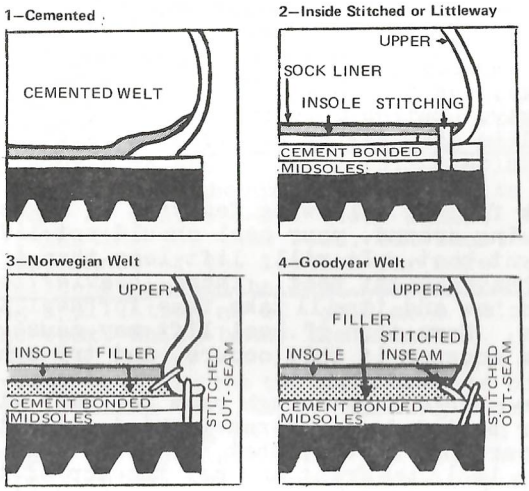
When packs are not in use protect the shoulder straps and hip belt from abuse by securing them to frame. Do not sit on frame and never drop it because the frame will break and the bag-seams will split. Frames should be stored in an upright position resting on the plastic cap ends, or placed on side. Loaded packs may be placed on bag side, but never should they be placed flat with frame side down. Also, be careful where you place your pack because the sleeping bag is usually tied to the bottom and could become damaged by dirt, rocks, or sticks.

Boot selection and care

Properly fitting boots for an outdoor wilderness trek is all important. Because the purchase of such boots involves a sizeable investment, professional advice should be sought before acquiring them.

Boots are classified according to intended use. Usually manufacturers agree on the following classifications: (1) Trail boots are lightweight boots (waffle stompers) for use on hikes of short duration with light loads. (2) Hiking boots are designed for rough trails, cross country hiking, and heavy loads. (3) Climbing boots are designed for off trail work and mountaineering. (4) Kletterschue boots are designed for climbing rock. And Mountain boots for difficult climbs, are insulated for ice and snow, have deep lugged soles, reinforced heel and toe counters, and usually come with one or two inner boots. Dozens of boot styles are available which fall within these classifications. The boot finally selected usually will be a compromise depending upon the purposes for its use. However, the boot should meet these conditions: (1) Leather uppers high enough (6-8") to protect the ankles on a rough trail; (2) a hard toe and scree heel; (3) the outer soles of neopreme rubber ($\frac{1}{2}$ to 1" thick) with a multitude of lugs for friction. Recommended are "Vibram" soles reinforced with a steel or fiberglass shank. (4) The boots should be fully leather lined, padded softly at the ankles, and have a soft high tongue.

Usually the cost of boots reflects the quality of the materials and the methods of sewing and gluing the boots together. The soles of boots are normally attached to the uppers in the following manner: (1) Cemented--simply folding and gluing; (2) Goodyear--this process involves the five basic parts; (3) Norwegian welt--like the Goodyear welt, it involves the basic parts but it allows for heavier thread, and the result is an extremely rugged boot; (4) Littleway construction--involves the four basic parts: the upper, insole, midsole, and outsole. The fact that there is almost no overhang or extension is a desirable feature for climbing. See the drawings below.



Foot travel is the primary means of transportation in the wilderness. Proper foot care will keep your feet sound and healthy. Properly fitted boots well broken in will prevent much of the foot trouble experienced by newcomers. Cut toenails short and square. Clean your feet and socks, and use Skin-Lub or powder to reduce the possibility of blisters. Wash your feet before, during, and after hiking. Change your socks often--daily. Do your best to keep feet and socks dry. Treat cuts and sores with antiseptic and bandaids or moleskin

Hot spots or blisters should be given immediate attention. When one member notices a blister, stop then and apply aid. A crew can travel only as fast as its worst blister allows. Read the section on Boot and Foot Care carefully. Also check the technical manuals for more specific information about the selection, fitting, and use of boots.

Boot Fitting and Protection

When purchasing hiking boots do not settle for a less than comfortable fit. Kelty sends with their boots this important article, "How to Fit Your New Boots."[3]

> Put on the boots with the socks in which you intend to hike. We recommend one thin inner sock, and one thick woolen sock for all medium and heavy weight boots, and one thin and one medium sock or just one medium sock for lightweight boots. Do not wear cotton socks, as they may abrade the feet. Lace the boots snugly, but not uncomfortably tight with your heel well in the heel of the boot. Walk around with both boots on.
>
> Look for the following features of a good fit: While walking around, your heel should not lift in a lightweight boot. It will lift less than ¼" in a medium or heavy weight boot. These heavier boots are stiff when new and it will take time for heel lift to disappear. More than ¼" heel lift may cause blisters. Relace snugger if this occurs, and try again.
>
> Toes should have enough room for easy wiggling. Kick your booted foot moderately hard against a firm wall. Be careful, though, that if your feet are touching, that it is the front and not the top of the box toe you feel. A light touching on a very hard kick is alright. If the boot is too short, you will know it from this test.
>
> Another test for boot length is to loosen the laces and push your foot forward so your toes are touching the front. You should be able to slide a finger behind your heel in the boot. This will indicate that there is at least ½" of toe room, the minimum amount necessary to insure that your toes will not be jammed when hiking downhill.
>
> Many medium and heavy boots may feel stiff at first. Your feet should feel snug but not pressured. Wear the boots for several hours in your home before wearing them out of doors. Either they will continue to feel good or the pressure will increase.
>
> Stiffness is necessary to support and protect your feet, and breaking in is as much a process of your getting used to the boots as it is of their molding to your feet. If the boots feel good at home, hike in them for moderate length trips until you are used to each other. Be sure to carry some moleskin or molefoam to reduce the blister danger.
>
> Hiking in your boots is the only way to break them in to your feet, and it will probably take several hikes before the boots will be thoroughly broken in.

Kelty also has some suggestions on how to protect boots before and after hikes.[4]

> The leather which was once part of an animal is now part of your new hiking boots. Since the natural oils from the living animal are no longer available to preserve it, an artificial agent is required to prevent the leather from drying out and cracking. We recomment that a silicone or silicone-wax (not a boot oil) be used to accomplish this. The liquid silicone is preferred over the spray types for its better penetration. A silicone-wax does a more effective and longer lasting job than both, but smooths and darkens the appearance of the leather far more. In any case, the silicone should be kept away from the lug sole during application as it acts as a dissolving agent on the epoxy which bonds the area.
>
> Water and heat are the two main enemies of your hiking boots. Soaking them, then walking them dry does not hasten the breaking in process. Modern hiking boots are made of two layers of leather, which shrink at different rates; the consequences are then obvious. Generally speaking, keep your boots as dry as possible. Take them off when wading streams (use tennis shoes instead) and cover them over at night to prevent icing. Store them dry, stuffed with newspaper, to prevent molding. If your boots do get wet, dry them at room temperature or in direct sunlight only. Absolutely never place them at a direct source of heat such as a campfire, stove, oven, radiator, or car trunk. Rapid heating drastically increases shrinkage and can also burn the welt of your boots, causing sole separation.
>
> All hiking boots must be broken-in before they will become completely comfortable. And the only way to break them in is to wear them. Some practices can help: Initial tight lacing will force the leather to mold to the shape of your foot faster and better than if loose; early lubrication with a silicone or sili-

[3] Used by permission, Kelty Mountaineering & Backpacking

[4] Used by permission, Kelty Mountaineering & Backpacking

cone-wax will cause the leather to soften sooner than it otherwise would.

Blisters occur even in the best fitting new boots. Prevention is the best cure. First, be sure your boots are broken in before undertaking a lengthy backpack trip. Wear the boots for several days before you leave to condition your feet and build up callouses where they will be needed. Use moleskin at the first sign of a "hot spot" to prevent a blister from developing. Liberal use of moleskin at the heel and around the upper ankle is wise with any new boots.

Proper lacing can increase the efficiency of your footwear. Double lacing at the instep (usually the third lace from the top) can often control heel lift. The tightening of laces before beginning a long downhill trek helps to keep the foot from sliding forward. An overhand knot made partway up in the lacing will give your toes more freedom while keeping the critical instep area snug.

Most quality hiking boots can be resoled if the sole is not worn past the lug. You may contact us (Kelty Mfg.) for recommended repair services when the time arrives.

Foot Care

Foot comfort and care is extremely important to the success of any athletic activity. Prevention of blisters and foot trouble is the best cure! The problem can partially be eliminated. (1) Use only properly fitting shoes and socks as suggested by Kelty in the above article. (2) Apply a temporary outer skin (TUF-SKIN) to toughen the skin so the rubbing and friction will not produce a blister. Rubbing feet with alcohol or soaking them in tannic acid about two weeks before the trip will also help.[5] (3) Use powder or skin-lub to cut down friction. (4) Use tape, protective pad, or moleskin. (5) Keep feet dry and change socks often.

When a hot spot develops, tell the leader immediately so that it can be taken care of. The success of the trip partly depends upon your cooperation in letting the leaders know of injuries, regardless how minor you may think they are.

When blisters develop, the following first aid treatment is needed.

[5]Colin Fletcher, The New Complete Walker. New York: Alfred A. Knoph, 1974, p. 57.

1. Wash the area with soap and water, and make a small puncture hole at the base of the blister (in good skin, not the blister itself) with a sterilized needle. Allow it to drain.
2. Apply a sterile dressing and protect the area from further irritation by padding and tape.
3. If the blister has already broken, treat it as an open wound. Do not trim off skin unless it has hardened and will cause more friction. Use protective pad and tape.
4. Self-care for blisters should not be attempted when the blister fluid lies deep in the palm of the hand or sole of the foot.[6]

Clothing

Clothes are selected for warmth, ventilation, and for protection from the elements. Style is not necessarily considered when planning a trek into the wilderness. The principle of wearing clothes in multiple layers seems to be the best. Also because of the rapid changes in weather conditions, clothes must be easy to put on and take off. An example of the layer concept would be underclothes (wool or cotton), wool shirt, sweater, and windjacket or parka. This allows one to adjust gradually to weather conditions without becoming chilled or overheated. Garments should also be of loose fit to assure minimum constriction of movement.

When choosing the types of clothing, always allow for the unexpected! A brief description of the insulation value of the material used to construct clothing and equipment may be helpful. Cotton is a general-purpose material which absorbs water, but it has virtually no insulating value when wet. Wool is the best all-purpose material for warmth, but because of weight and bulk, it is impractical for every need. Socks, pants, shirts, and hats are excellent wool items. The last natural fiber for insulation and warmth is down. It has proven to be excellent when dry but, like cotton, is almost useless when wet. The synthetic materials Dacron, Fortrel, and

[6]American National Red Cross, Standard First Aid and Personal Safety. 1973, p. 59.

Fiberfill II absorb very little water, dry quickly, still provide insulation value when wet, and usually are less expensive.

There are also various types of fabrics used in wilderness clothing. A brief description of them may help your selection of garments. Ripstop nylon is a lightweight, uncoated breathable and partly water-repellent fabric with a cross pattern of extra threads forming a grid which increases tear strength. Nylon taffeta is a dense, strong uncoated nylon which is down proof, wind proof and partly water repellent. 60/40 or similar combination of cotton and polyester nylon is high abrasion resistant and tear strength, moderately water repellent, and wind proof. The cloth provides all weather protection. Polymer coated or similar waterproof coated nylon has a high tear strength. Uncoated nylon provides wind protection but is not water repellent.

Sleeping bags

Sleeping bags come in a variety of shapes, sizes, fabrics, colors, and fills. Your choice may depend upon finance, camping style and weather. Normally a 2 to 2½ pound goose down mummy bag of slant tube construction, breathable nylon, and weight of less than five pounds would be the ideal choice for most conditions. But the new Fiberfill II insulated bags may be preferred under wet conditions.

The heat management of a sleeping bag depends on the entrapment of dead air within the bag itself. The loft or thickness determines the degree of insulation. The fill is not used for body support or cushioning. The four common methods of construction are: (1) Sewn through--inner cover stitched directly to outer with fill between; (2) Box partitions--sewn to inner and outer with fill between; (3) Slant tube--usually one of the more expensive methods but very efficient because of offsetting of inner and outer seams, thereby reducing the possibility of cold spots; (4) Overlapping tube or similar construction--very similar to slant tube, see figure 2 below.

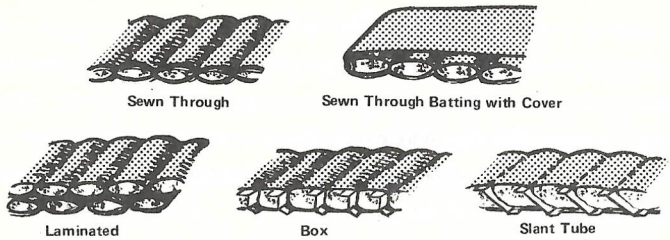


Figure 2

The bag should be stuffed and carried in a waterproof nylon bag (10" x 20"). Better still is to cover the sleeping bag with a waterproof plastic bag and then stuff in bag. The total weight of a bag should be less than five pounds and suitable for temperatures from 25 to 65 degrees for spring and fall use.

In order to insulate the bag properly, place a 2 to 4 mil plastic ground cloth upon the selected sleeping site. If you are using floored tents, then use the ground cloth underneath the tent. Next place a ¼ to ½ inch ensolite or other closed cell foam upon the ground cloth or tent floor. This provides excellent insulation but very little cushioning for comfort. If you need more support, then use a 1 to 1½ inch foam pad or an air mattress (48 to 56" is adequate). For more detailed and specific information on sleeping bags, check catalogs and technical manuals.

Energy Maintenance

In order to conserve energy it must not only be managed but it must also be maintained. The maintenance of energy in backpacking comprehends every subject from beginning to end. This chapter will only deal with a limited number of those subjects.

Pitching and Striking Camp

Selecting a campsite in the mountains or other terrain can be difficult. Beware of possible flood areas due to sudden showers. Stay away from open areas and ridges because of electrical storms. Every member of the crew should know how to pitch, strike, fold, and carry the backpack tent and fly. Remember that because most campsites are not level, you should learn how to pitch a tent on a slope and sleep with the feet down.

How to erect a dining fly

Many times the first protection from the elements to be erected is the dining fly. One 8' x 10' (or larger) tarp of coated nylon, two 6' telescoping poles, two 50' or longer nylon 1/8" ropes, and 8 stakes are needed for the type described in figure 3. The tarp is first laid out, and one 50' rope is passed under the first third so that the rope can be tied at the grommets. A loop of rope is passed through the grommet, and a girth hitch is tied to a small stick to secure the rope. Pull the rope straight to the opposite grommet and tighten tarp against the rope and tie the same knot. This should leave plenty of rope on each side to stake down the guy ropes. Next, assemble the 6' poles and attach them with a clove hitch near the grommet with the rope already attached. Erect poles and have someone hold until you stake them down. Next run the rope through the front tip grommets and stake out front. Do not cut the rope; simply use sticks and loops or girth hitches. Now use the second 50' rope and tie a two half or taut line hitch in the back corner grommet, pull tight against the front and stake down about three feet away. Tie the rope to a stake and then run it through the other grommets, using girth hitches and sticks to secure the rope so it will not slip. Tie the opposite corner grommet knot, stake to the ground and finish with a taut line hitch. The finished erected tarp (fly) should look something like the pictures in figure 3. If it is raining, the fly allows storage for personnel and equipment while you wait out a storm or while crew tents are being pitched. Life support means staying dry. The fly becomes a cooking area, storage space, or meeting place for the crew after the tents are pitched.

Knots

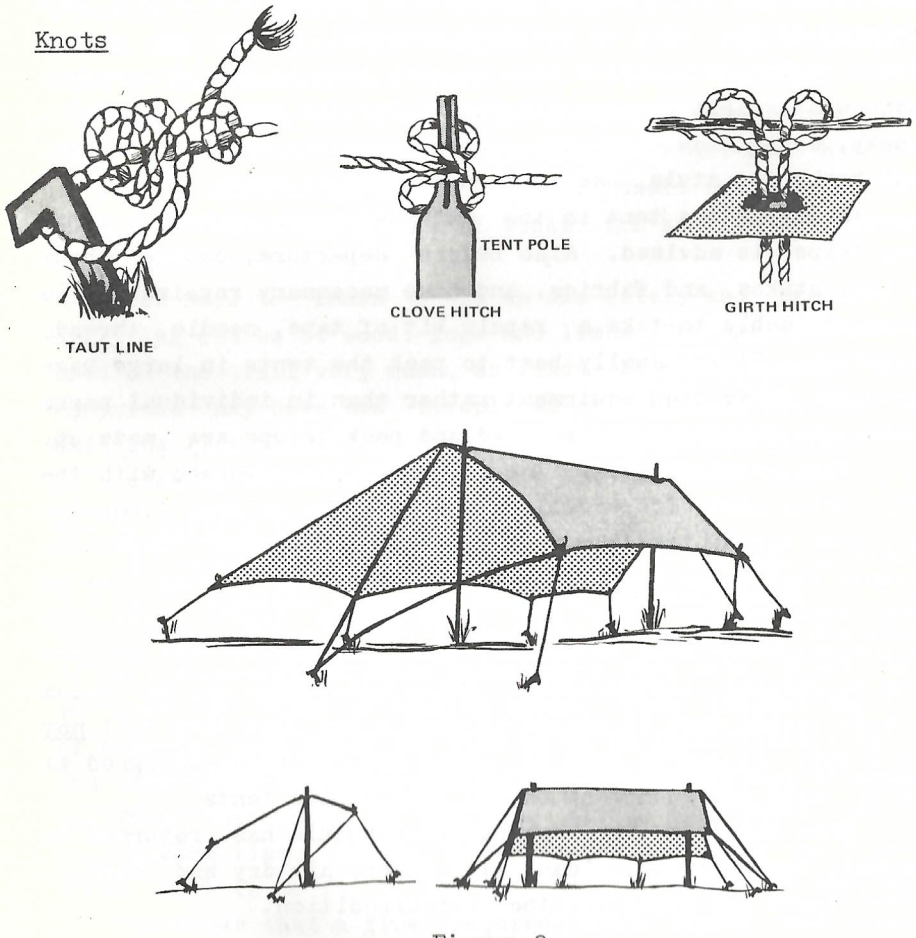


Figure 3

Tent pitching

After choosing a site for pitching the tent, remove rocks, sticks, lumps, etc., being careful not to destroy the soil, then lay a plastic ground cloth over area where the tent is to be pitched. This cloth will serve not only as protection for the tent floor but will provide additional insulation for the occupants. The tent is placed on the ground cloth, unrolled and erected according to the instructions for the particular style of tent. If a proper site is chosen, trenching (a wilderness no-no) should not be necessary. Shock cord loops should be placed in stress grommets to protect the fabric from tearing in the wind or occupant movement during the night. Steel stakes or wire pins seem to work best in alpine country; otherwise select appropriate stakes for the type of country--rocky, soil, snow, ice, etc. Check mountain shops, catalogs, and books for style, use, and purchasing of tents.

Pitching the tent in the backyard or on shakedown camping trips is advised. Also before departure, double check poles, stakes, and fabrics, and make necessary repairs. It is also advisable to take a repair kit of tape, needle, thread, etcetera. It is usually best to pack the tents in large bags with the other crew equipment rather than in individual packs until the trailhead is reached and pack groups are made up.

When striking camp, the procedure is reversed with the fly being last. If possible allow the tents to dry; otherwise dry them during the day at a break time or lunch. Carefully remove stakes and poles, counting each one and placing them in bag designed for their use. Then remove trash, shake out wrinkles, throw lines to middle, and then fold or roll according to packing instructions. Poles and stakes may be placed inside rolled tent if placed in such a way that they will not fall out. It may be best to place them in packs assigned to carry tents and equipment rather than inside tents.

When the trek is over and the schedule has returned to normal, remove tents, clean with water, air dry and repair, then repack and store for the next expedition.

Cooking fire

To build a good cooking fire, select your wood carefully. The rockies have seven principal kinds of trees: aspen, cottonwood, juniper, pine, spruce, and scrub oak. Other regions have their own distinction in trees and wood. You should be able to identify wood not only by the leaves, but also by the bark and wood grain. Oak, hickory, and other hard woods make the best coals for a cooking fire. Fir, spruce, and pine are suitable, but better used to kindle a blaze. Juniper, cottonwood, aspen, and other soft wood may be used for tinder but unusable for a cooking fire unless that is all you have. Then do the best with what you have. It is also wise to carry a tube of fire starter per crew.

The in-thing now is to use the portable stoves, especially, since many of the wilderness areas forbid fires. Much has been written by experts in the field about their use, care, and purchase. Chech the technical books for additional information.

You need to learn to use an axe safely and practice by splitting chucks of wood, logs and limbs. The axe will not be used on the trail very much, so leave it in base camp. Some campsites may have had fireplaces or rings; if so, use the existing fire point. Please do not create additional scars in a camp by building a fire where one has never been.

How to build a fire

Building a fire from scratch is an art; but once mastered, the skill provides pleasure, comfort, and confidence. A cozy fire is one of man's best friends--but it can become his enemy if left uncontrolled. When selecting a fire site, first check for previous rings or cooking areas. Then inspect the type of material upon which the fire is to be laid. Visible debris and underlying burnables must be cleared out at least 6' around and from the center of the fire site. Also check for low overhanging limbs, bushes, or trees above or near the fire. A crown fire is no fun to put out and could possibly trap you.

Remember that a fire requires heat, tinder, and oxygen.

The lack of any one of these will cause failure. Keeping in mind then these essentials heat, tinder, and oxygen, carefully select your tinder (light, dry, highly burnable material) and lay it upon a larger piece of wood. This larger piece of wood will help provide oxygen by keeping the tinder off the ground. Next place kindling, squaw wood (twigs, pencil-sized sticks) upon tinder in teepee fashion. Then place larger sticks and wood upon that in teepee fashion. Some suggest laying the entire fire before lighting it. This will help dry larger wood that you may place around the teepee in a log cabin style. If no tinder of this type is available, then whittle shavings from dry wood. Paper or fire starter can be used on the tinder to assist the fire in wet weather.

You should gather enough firewood to burn for several minutes before you light your fire, unless you are in an emergency situation. Otherwise your fire will die while you are gathering wood. Store wood in a neat pile within reach of the fire, and provide a plastic cover for the night. Also store in a plastic bag some prepared tinder and kindling for the morning fire. It is usually advisable to burn everything around the fire area to help police the camping site and remove possible obstacles which might cause campers to trip over, sprain an ankle, or fall into the fire itself.

Under wet conditions the driest wood will be the dead twigs and limbs found on standing trees, rotten logs, and under rock ledges. A saw and axe is really not necessary in wooded regions, as mentioned before, but they may be needed where wood is scarce. Then they would be necessary to cut, saw, and split up larger trees, limbs, roots and logs.

After laying tinder, kindling (toothpick size) squaw, and larger wood in teepee fashion, kneel with your back to the wind or use a wind break, and light a separate piece of tinder and plunge it into the prepared tinder. You may have to use a stick to raise the kindling so the tinder can get oxygen or blow directly into the tinder once it is lit. As your fire grows, add kindling to the inner fire and soon the entire mass will blaze. As mentioned before, a log cabin arrangement of logs or limbs may be placed around the teepee fire to produce a bed of coals for cooking, heating, or drying.

Maintain energy by adding only enough fuel for your purposes. At night the fire can be banked with logs so that it will burn slowly and provide coals for morning. Be extra careful on windy nights. You may prefer to cover the fire with soil to conserve the bed of coals during wind. The best procedure is to <u>put out</u> the fire when not in use.

When you are ready to extinguish the fire, drown it by sprinkling water over the embers and surrounding area. Stir with a stick and spread the coals thinly. Make sure the fire is <u>out</u>. While you stir the coals, you may desire to pick out all trash, place it into a bag, and PACK IT OUT.

If you are not using previous fireplaces, then restore the fire area as much as you can. Bury the coals, replace soil, cover fire scar, and scatter the extra wood. If you are using established fire rings, you may still bury the coals, stack extra wood for future campers, and leave the area better than you found it.

<u>Cooking dehydrated food</u>

You may not be able to practice cooking at high altitude, so practice cooking dehydrated food right home in the kitchen or backyard. Wilderness menus contain high-protein, vacuum-dried, dehydrated, and freeze dried foods. Directions for preparing these menus are explicit, but practice improves confidence. Practice cooking these meals also during the shakedown camps scheduled in advance of the trek.

High altitude cooking is different than at lower elevations because in addition to altitude, water at higher elevations is generally colder and requires more time to boil. By keeping pots of food and water covered, you can increase the air pressure and raise the boiling temperature of the water. To overcome the loss of time due to high altitude and cold water, you should schedule your meal preparation early enough to finish before nightfall.

Cleanup

Cleanup is part of the cooking process. While you are enjoying that delicious meal, be sure to have dirty pots and pans soaking and a pot of water on the fire for washing and rinsing your cooking and eating gear. When you finish eating, the water will be hot and ready to use. Careful washing and rinsing in hot water will protect your crew's health. Diarrhea and dysentery make an expedition miserable, and they sap strength necessary to maintain good health. Time taken to boil water for rinsing dishes is well spent. Dirty water should be strained through a grass sump, then burned on the blazing fire. A grass sump is made by putting grass into a plastic bag, punching holes in the bottom, and pouring the water through it.

Toilet paper (AP--meaning all purpose) is used to wipe all pots, dishes, and eating utensils before they are placed into the washing water. This helps keep the wash water free of garbage which makes cleanup a little easier. Please burn all waste paper, bag the unburnables, and pack it all out.

Wilderness Etiquette

Cleanliness

You need to keep personally clean. A happy camper is a clean camper! Personal cleanliness will make you feel better, smell good, and look decent to the rest of the crew.

Sanitation

Sanitation is your personal responsibility. Dispose of human wastes by digging a crew latrine or by using the individual cat method. Use a garden trowel to dig a small hole at least 100 feet from the nearest water; cover the hole tightly immediately after use. If crew latrines are used, carry some lime or chemicals to help decompose waste and to keep odor down. If you don't have a trowel, then kick over a stone and use the depression; then replace the rock and make it as natural as possible. Protect your toilet paper with a plastic bag and watch about leaving it on the ground because it could roll down hill. At base camps, a standing plastic cover or trail fly could be used for privacy. Folding seats with waste bags could also be used in base camp.

Female hygiene

Female backpackers present some special problems in regard to hygiene. Because during the trek some may begin, be in the middle of, or be finishing their menstrual period, special considerations must be made for their health. Medication prescribed by their doctor should relieve cramps and any discomfort. If there are any odor problems, females should carry disposable douches or a feminine hygiene deodorant. Pack an abundant supply of tampons or sanitary napkins; burn or bury them after use; they are biodegradable. If females in group experience fatigue during their period, then provide extra rest, lighten their loads, or give them a day off.

Bathing

Streams, lakes, springs, and ponds are not for bathing and laundering. Carry water a safe distance (50' to 100') from natural water sources when you bathe or do your laundry.

A special area should be assigned for bathing at each camp. A standing plastic shower could be erected at each camp for bathing and latrines such as those suggested above. The dirty water should be put in the sump or latrine, not in streams and lakes. Springs and streams are sources of drinking water. Polluting a spring or stream is a serious offense against your fellowman and the wilderness.

Health and safety

Strict adherence to proper health and safety practices is crucial to life support. Each camper is responsible to himself for remaining strong and healthy. Of even greater importance, each camper is responsible to other members of his crew. Failure to purify water or to rinse dishes thoroughly may affect everyone in the crew. Health and safety are a crew responsibility as well as an individual one. Don't jeopardize the expedition because of carelessness.

"Don't cut switchbacks!" The government, conservation teams, and others have spent considerable time and money building good trails. Don't take short cuts, therefore, by cutting through a switchback. Also, leaving an established trail could lead to accidents. Switchbacks are designed to conserve the soil and your energy in steep terrain. Cutting them is inconsiderate and thoughtless--a sure sign of a greenhorn.

Each crew carries its own first aid kit to treat minor cuts, bruises, scratches, blisters, and burns. More serious cases must be treated by trained medical staff members. The nature of the injury and the patient's location determines whether he is brought out of the wilderness or not. Each camper should carry a few first aid supplies. In addition to the regular supplies in a kit, a set of air splints should be carried.

An exact itinerary should be filed with the forest rangers so that they will know the crew's location at all times. Help should always be within three hours walking or running time. Proper supervision and good leadership help eliminate illness and accidents that come about because of horseplay.

Trail procedures

Experience has taught mountaineers that summits of mountains, crests of ridges, slopes above timber line, and large exposed meadows are extremely hazardous places to be during lightening storms. If you are caught in such an exposed place, quickly descend to a lower elevation away from the direction of the approaching storm and squat down, keeping your head low, and if necessary put your gear under your feet. A dense forest located in a depression provides excellent protection. Avoid taking shelter at the base of large trees, however, and stay away from fences and other objects which will conduct electricity.

By squatting down on top of your gear, you will have minimal contact with the ground, thus reducing danger from the ground currents. Your boots, if kept dry, will provide good insulation also. If the threat of lightening strikes is great, your crew should not huddle together but scatter and spread out.

During periods of heavy rains, stay away from possible flood areas such as canyon bottoms, creeks, and low places. Search for higher ground during downpours, and be prepared to evacuate immediately.

Lost instructions

If your crew hikes together, the possibility of anyone becoming confused or lost is remote. The trails in national parks are usually well marked. You should learn how to read a map and use a compass with reasonable proficiency, therefore reducing the chances of getting lost. Never should you be allowed to hike alone, or wander by yourself away from the crew at any time. Always go by twos, or better still, by threes and fours, even when gathering firewood or other chores. It is a lot safer.

If one member or an entire crew becomes confused, it is usually best to travel downhill. Sooner or later you will find a trail, a camp, a stream or a landmark that you may identify. Do not travel at night! Stop, make camp in a shel-

tered place, build a fire and keep it going, if necessary to maintain heat. The light of the fire may also help a search party. Prepare yourself for the night--pray, read, or meditate, but stay cool and calm. Stay dry and when you are warm, some extra food will boost your morale and help maintain your energy.

Trail organization

You will be placed on a crew of 8 to 12 people if the expedition is a large group. A well organized crew does its chores quickly and has more time to enjoy the program. Teamwork, sharing total responsibilities, cooperation, and initiative are fundamentals to a successful trek. A daily duty roster will help to organize the crew.[7] The youth crew leader assigns the responsibilities each day. Rotate jobs so that at least one experienced person and one new person work together. Every job should be clearly defined. The crew should have a list of all responsibilities for each job. Every person should know his assignments at the beginning and end of each day. A philosophy should also be developed that says, "If something needs to be done, do it without praise or credit." After a few days the chores will come naturally, and by the end of the trek you will have mastered them.

Hypothermia[8]

Hypothermia is sometimes called the killer of the unprepared. In basic terms, hypothermia is a severe lowering of the body temperature due to the heat losses exceeding the heat production.

A human body has a complex and effective heat generating system. The basic metabolism of the individual determines the heat generating capacity when at rest. Muscular activity increases heat output to several times the basic metabolism. External heat sources are sun, fire, and hot liquids.

Heat is lost from the body in a number of ways. Radiation, convection, and conduction are the basic methods for the transfer of heat. Wind and water have a tremendous effect on heat transfer. The insulating value of clothing may be reduced by 90% if it gets wet. Wind will reduce the effective temperature of the air as can be seen from the Wind Chill Chart below. The body also loses heat by evaporation of moisture from the skin and by respiration.

The best defenses against hypothermia are: maintain the body's energy supply by eating high calorie foods. Sugary foods are best for quick energy, while protein and fats are longer lasting.

Exercise to maintain heat production but avoid fatigue.

Wear adequate clothing. In wet conditions, wool is one of the best materials for insulation since it retains much of its insulating value even when it is wet. Synthetic materials such as polyesters and foams have good wet weather characteristics. Down is the best insulation available for cold, dry conditions, but is nearly worthless when wet.

Seek shelter from wind and water. A tarp or tent will reduce the chilling effect of wind and rain. Build a fire to keep warm. Keep it small, and tend it carefully to prevent it from spreading.

Wind Chill Chart

U.S. Army research has established data to determine the thickness of insulation needed for comfort at various temperatures and levels of activity. Actual temperatures must be converted to Effective temperatures by using the Wind Chill Chart. To use this Wind Chill Chart, find the estimated or actual wind speed in the left hand column and the actual temperature in degrees F in the top row. Effective temperature is found where these two intersect. For example, with a wind speed of 10 MPH and a temperature of -10° F, the Effective temperature is -33° F.

Wind Chill Chart - Effective Temperature

Wind Speed MPH	Actual Temperature °F							
	40	30	20	10	0	-10	-20	-30
	Effective Temperature °F							
10	28	16	4	-9	-21	-33	-46	-58
20	18	4	-10	-25	-39	-53	-67	-82
30	13	-2	-18	-33	-48	-63	-79	-94
40	10	-6	-21	-37	-53	-69	-85	-100

Greater wind speeds have little added effect.

Water management

The importance of drinkable water within reasonable walking distance of the camping area cannot be over-emphasized. You can live several weeks without food; but without water, life support can be numbered in the days depending on the cir-

[7] Appendix D

[8] "Hypothermia" used by permission, Recreational Equipment, Inc., 1975, p. 4.

cumstances. You need good water sources. For average efficiency, you need to drink about 2 quarts daily or a gallon or more under hot climate conditions. Even these amounts change drastically if hiking, climbing, or working under extremely arid and hot conditions.

Never delay drinking some water when you feel thirsty because dehydration decreases body efficiency. Your body will usually let you know, so fill up. Also be careful to avoid useless waste of body water. Remember wind dehydration, sweating, sun, and evaporation will sap body water, which in turn robs efficiency and energy. Wear protective clothing and regulate body temperature by using the layer concept to avoid some of the loss through perspiration and evaporation. Any intake of alcohol accelerates dehydration.

The main sources of surface water are ice, snow, hail, rain, dew, some plants, and sap from trees and fruit. Study carefully the topo maps to know your water supply. In rocky, mountainous terrain the main sources are lakes, streams, snow, ice, springs, underground seepage, rivers, and depressions in rock formations. If you have any doubt whether water is safe to drink, use purification tablets or boil the water for ten minutes. Muddy or trashy water can be strained through a handkerchief, then boiled or purified with tablets.

During rain showers catch water in pails, buckets, and large tarps. You could soak clothes, towels, etcetera, then wring them out into canteens. When water is available, use it wisely.

In areas where there is plenty of water, you may want to use a small bottle (1 pt.) for a canteen. A folding bucket or plastic jug should be taken to carry water for washing and cleaning purposes. Larger canteens (1 or 2 qts.) should be taken for dryer areas. This is why it is important to study maps, talk to residents and knowledgeable people of the area before you backpack the territory. It also saves on weight if you know your water sources ahead of time.

At night you should keep your canteen or water bottle near you when you go to bed so that your thirst can be satisfied if you awaken during the night. "Remember it is the water in your body that saves your life--not the water in your canteen."[9]

[9]Eugene H. Fear, John Simac, and Everett Lasher, Outdoor Living--Problems, Solutions, and Guidelines. Tacoma Unit of Mountain Rescue, Tacoma, Washington, p. F-4, 1974.

LEADER'S INSTRUCTIONS

Introduction

Congratulations for considering a wilderness trek expedition as a part of your outreach for youth. Your youth program will not be the same after such an experience. You have assumed a great responsibility. Parents are entrusting their sons and daughters to your supervision and care. The leaders of your youth group are placing their faith and confidence in your leadership. Most important, the young people who will seek to realize their plans and to expand their skills and dreams have placed themselves in your care.

A wilderness expedition is a high adventure program requiring careful planning and preparation. This handbook will assist you in the numerous details that need your attention prior to departure. Many of these details are listed below. As an expedition leader, you may find it helpful to select your staff of adult and youth leaders early and review at scheduled times the progress of the expedition. Appropriate information should be shared with members of the group by monthly newspapers, personal letters, and meetings.

Creative planning

Your first responsibility is to be creative and plan the trek, then assemble qualified and trained personnel who can complete the planning. The first meeting of the staff should be one of brain-storming about the idea.

1. Begin check lists.
2. Choose area for trek.
3. Send for maps (see Appendix M).
4. Study maps, talk with people who have traveled area.
5. Design brochure, plan meetings, and mail invitations (see Appendix C).

Prior to the initial meeting with the youth and their parents, make a tentative schedule of activities, travel plans, etcetera. Your adult staff and youth leaders could be involved in this planning. If possible, make a preliminary trip to the area to check trails and climbing possibilities. The trip could be also used to train the leaders.

Management

A. Plans for the first meeting.[10]
   1. Have qualified staff, equipment, brochures, and information. Remember in selecting your staff that the less experienced group needs the more experienced leaders. Qualified, experienced leadership is a must for group safety in a wilderness trek.
   2. Discuss the trip fully with parents and teens. Develop completely the logistics of the group's travel, housing, and meals in route, departure and arrival times, how equipment is to be handled, who is in charge and how the group will be disbanded after the completion of the trek.
   3. Have a question and answer period.
   4. Have applications ready.
      a. Require a deposit ($5.00 to $25.00). You should establish a schedule of fee payments. Make certain you keep a copy of the schedule and that every member of the crew adheres to it. All payments should be completed 30 days before the trek begins. This schedule provides an operating fund months in advance of departure.
      b. Issue the "Wilderness Trek Handbook" to applicants.
      c. Announce next meeting or hand out schedule of activities.

B. Recruit young people who will be at least 14 years old by September. Maximum age for high school is 19 years. (You may want a junior or junior high age group, but you shouldn't mix them.) The college age youth should also backpack separately from lower age groups.

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[10] Appendix E

C. Organize your group into crews (8-12). This includes adult couples. Use the roster included in this handbook. An ideal crew, from the experience of the author, consists of an adult couple and about 10 young people. Two couples are even better, for it insures continuity of leadership in the event one leader or couple becomes incapacitated. More importantly, two couples complement each other's leadership and provide company on the trail.

D. Select youth leaders and train the members of your crew so that they will be prepared for high adventure in the outdoors.

E. See that all crew equipment is packed and ready for use. (See equipment lists in Appendices A and B)

F. Be in top physical shape. Start early and stay in shape. The physical requirements for yourself and your young people are extremely important. Every camper on the expedition must be physically fit and strong. Everyone must be capable of carrying his pack, weighing 25-35 pounds, over rugged mountain terrain at high altitudes. Arrange your travel schedule so that your group will have at least 36 hours at high altitude to acclimatize before doing any serious hiking or climbing.

Individuals who are excessively overweight should begin a program to reduce to a proper weight. Anyone with physical disabilities that would prevent him from backpacking over rough trails, or those who have heart conditions or high blood pressure should not consider going on the trek.

The leader needs to be in better condition that the youth because in addition to the regular duties that everyone does, he will need energy for supervising, first aid care, and teaching camping skills.

G. Plan the "shakedown trips." The shakedown camps are designed to demonstrate approved equipment and familiarize the campers with procedures and skills. These short week-end trips are indispensable! The leader has the responsibility to check all the equipment of each participant to make sure that all items meet minimum weather, trail, and travel conditions. The equipment lists in this handbook are maximum check lists--absolutely no more is to be taken! Much of what is listed can be left, depending on circumstances, but take no more. The shakedown camp should be a fun time. Keep it active and the skill demonstrations short and to the point. Just introduce concepts and principles and mention skills that they will learn on the trail and base camp. The teaching of skills is better learned in the wilderness where they will be used throughout the experience.

H. You will need to write for catalogs from several outfitters because the youth will want to know where to purchase equipment. You should know where to and how to buy the necessary equipment.

I. A medical checkup should be required for every camper and leader. Each person should have a tetanus shot or booster. It may be best to schedule the checkups at one time for everyone from a local clinic or doctor.

Preparation

This handbook is designed to help you find resources for training and preparation. Much of the success of the expedition will depend upon the thoroughness of training. Some excellent books and articles have been written by experts in the field, and these should be included as a part of your preparation. Check the bibliography and begin your reading early. Be prepared to advise your group on what books are best for them. You may want to collect several books and have them available for the group to check out.

Ecology

Your help is needed to protect the wilderness ecology. Unsightly garbage disposals, scarred fire rings, and trash should be eliminated in accordance with state and federal re-

gulations. PACK IT OUT--PACK IT ALL OUT. "LEAVE ONLY FOOTPRINTS--TAKE ONLY PICTURES."

Your cooperation is needed to protect the wilderness from abuse. If the camp was used before your arrival and it was left in bad condition, clean it up for others who will perhaps travel that way. Garbage should not be buried anywhere in the wilderness, since bears and rodents will uncover it.

Review the section titled "Wilderness etiquette" with your crew and make sure they understand. Correct violations in the field by mild punishment. Please join with others to preserve the American resources.

Safety and First Aid

You should by all means be certified in First Aid by the Red Cross Association before you attempt a full-scale backpack expedition. Pack a complete first aid kit, handbook, and snakebite kit (or use the L-C treatment developed by Herbert L. Stahnke, Ph.D.)[11] A mini course in first aid should be taught at the first trail camp, and each camper should know where to find the kit, what is in it, and how to use it.

It takes knowledge, experience, and preparation to plan a backpack trip and a daily routine that will take you safely from your home to the wilderness and return. As a leader, be on guard at all times to eliminate possible injuries. The main contributing causes of accidents in camp and on the trail are engaging in horseplay, getting in a hurry, and allowing yourself and others to become fatigued.

[11]Herbert L. Stahnke, "The L-C Treatment of Venomous Bites or Stings," The American Journal of Tropical Medicine and Hygiene.

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About the author:

Bobby has been an outdoor enthusiast since his boyhood years. Although he is a native Arkansan, he is really a product of the Southwest, having spent most of his life in Texas, Oklahoma, New Mexico, Colorado, and Arkansas. He entered the Air Force during high school and served as a combat crew gunner on a B-52 bomber for five and one half years. His camping experience includes survival training in the Air Force, twenty-two years of scouting, and organizing outdoor adventure programs for young people. He began the "Wilderness Trek" program, a rugged six day adventure for church youth in the wilderness of Colorado, in 1974.

The author is enthusiastic about the sports he participates in, whether it be tennis, canoeing, hunting, bicycling, or backpacking. Much of his time is spent organizing camps, retreats, and backpacking expeditions for the youth at church where he is employed. He serves as minister of youth for the Hillcrest Church of Christ in Abilene, Texas. Bobby, his wife Jolene, and their two children Scott and Denise, live at 2634 Garfield.

The author, a graduate of Harding College in Searcy, Arkansas, is working toward a graduate degree in Human Relations