

## Roundtable 2/6/03

Moderated by Steve Zeiler ([78gator@mchsi.com](mailto:78gator@mchsi.com))

### Agenda:

Announcements:

Upcoming events:

Future roundtables:

3/6/03 – planned topics include Safe Swim Defense and Safety Afloat training and Wildlife Management (national theme for April)

4/3/03 – potential topics may include Climb On Safely training and Emergency Preparedness (national theme for June)

5/1/03 – Health Care (national theme for July)

Commissioner College – Saturday, 2/15/03

District Award Banquet – Saturday, 2/15/03

Show and Tell – **2003 Gear Guide from *Backpacker* magazine**

Monthly program theme – **Cold Weather Camping**

Scoutmaster/Committee training topic – **Youth Protection**

Guide to Safe Scouting Moment – **Chapter XIII. Winter Activities**

Scouter's Minute – **Keeping spiritually warm.**

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## CAMPING Merit Badge

1. Show that you know first aid for injuries or illnesses that could occur while camping, including **hypothermia**, heatstroke, heat exhaustion, **frostbite**, **dehydration**, sunburn, insect stings, tick bites, snakebite, and blisters.
2. Learn the **Leave No Trace** principles and the Outdoor Code and explain what they mean. Write a personal plan for implementing these principles on your next outing.
3. Make a written plan for an overnight trek and explain how to get to your camping spot using a topographical map and compass.
4. Make a chart showing how a typical patrol is organized for an overnight campout. List assignments for each member.
5. Do the following:
  - a. Prepare a **list of clothing** you would need for overnight campouts in warm weather and in **cold weather**.
  - b. Discuss **footwear for different kinds of weather** and how the right footwear is important for protecting your feet.
  - c. Explain the proper care and storage of camping equipment (clothing, footwear, bedding).
  - d. Explain the term "**layering**".
  - e. Present yourself with your pack for inspection. Be correctly clothed and equipped for an overnight campout.
6. Do the following:
  - a. Describe the features of four types of tents and how to care for tents. Working with another Scout, pitch a tent.
  - b. Discuss the reasons and **methods of water purification**. Discuss camp sanitation.

- c. Tell the difference between "internal" and "external" frame packs. Discuss the advantages and disadvantages of each.
- d. Discuss the types of sleeping bags and what kind would be suitable for different conditions. Explain the proper care of your sleeping bag. **Make a comfortable ground bed.**
7. Prepare for an overnight campout with your patrol by doing the following:
  - a. Make a checklist of personal and patrol gear that will be needed.
  - b. Prepare a camp menu that is right for backpacking. Give **recipes and make a food list** for your patrol. Plan two breakfasts, three lunches, and two suppers. Discuss how to protect your food against bad weather, animals, and contamination.
  - c. Pack your own gear and your share of the patrol equipment and food for proper carrying. Show that your pack is right for quickly getting what is needed first, and that it has been assembled properly for comfort, weight, balance, size, and neatness.
8. Do the following:
  - a. Explain the safety procedures when using a:
    1. Propane or butane/propane stove
    2. Liquid fuel stove
  - b. Discuss the advantages and disadvantages of different types of lightweight cooking stoves.
  - c. Cook for your patrol a trail meal requiring the use of a lightweight stove.
9. Show experience in camping by doing the following:
  - a. Camp out a total of at least 20 days and 20 nights. (You may use a week of long-term camp toward this requirement.) Sleep each night under the sky or in a tent you have pitched.
  - b. On any of these camping experiences, you must do TWO of the following, only with proper preparation and under qualified supervision:
    1. Hike up a mountain, gaining at least 2,000 vertical feet.
    2. Backpack for at least four miles.
    3. Take a bike trip of at least 15 miles or at least four hours.
    4. Plan and carry out a float trip of at least four hours.
    5. Rappel down a rappel route of 30 feet or more.
    6. On one of your campouts, perform a conservation project approved in advance by the private land owner or public land management agency.
10. Discuss how the things you did to earn this badge have taught you about personal health and safety, survival, public health, conservation, and good citizenship.

Source: <http://www.meritbadge.com/bsa/mb/001.htm> from Boy Scout Requirements, #33215E, revised 2002

Webmaster's (<http://www.meritbadge.com>) Note: The 2001 and 2002 editions of Boy Scout Requirements mistakenly show requirement 9b6 as being 9c. There is no requirement 9c. The requirements listed above are correct as written. This has been verified twice through communications with the National Office of the Boy Scouts of America.

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### **WILDERNESS SURVIVAL Merit Badge**

1. Show that you know first aid for injuries or illnesses likely to occur in backcountry outings, including **hypothermia**, heat stroke, heat exhaustion, **frostbite**, **dehydration**, sunburn, stings, tick bites, snakebite, and blisters.
2. Describe from memory the priorities for survival in a backcountry or wilderness location.
3. Describe ways to (a) avoid panic and (b) maintain a high level of morale when lost.
4. Tell what you would do to survive in the following environments:
  - a. **Cold and snowy**
  - b. Wet (forest)
  - c. Hot and dry (desert)
  - d. Windy (mountains or plains)
  - e. Water (ocean or lake)
5. Make up a **personal survival kit** and be able to explain how each item in it is useful.
6. Show that you can start fires using three methods other than matches.
7. Do the following:
  - a. Tell five different ways of attracting attention when lost.
  - b. Show how to use a signal mirror.
  - c. Describe from memory five international ground-to-air signals and tell what they mean.
8. Show that you can find and improvise a natural shelter minimizing the damage to the environment.
9. Spend a night in your shelter.
10. Explain how to protect yourself against insects, reptiles, and bears.
11. Show **three ways to treat water found** in the outdoors to prepare it for drinking.
12. Show that you know the **proper clothing** to wear in your area on an overnight in extremely hot weather and **extremely cold weather**.
13. Explain why it usually is not wise to eat edible wild plants or wildlife in a wilderness survival situation.

Source: <http://www.meritbadge.com/bsa/mb/117.htm> from Boy Scout Requirements, #33215E, revised 2002

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### **Definition**

Cold weather camping as defined by BSA as "**camping in weather where the average daily temperature is below 50 degrees Fahrenheit and conditions are cold, wet or windy.**"

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**Antarctic Scientific Program**

<http://www.scouting.org/boyscouts/resources/18-900/index.html>

The 2003-2004 Antarctic Scout will join teams of scientists conducting research during expeditions scheduled for the Antarctic summer season. The focus of this assignment is to add value to the different research teams by providing the positive assistance required to accomplish their mission. As a support member, the candidate will assist the scientists in the daily activities required to successfully conduct their field research projects. These assignments may be as simple as helping to cook the daily meals and doing camp chores to the more challenging tasks of gathering and analyzing samples for testing—and even wrestling seals!

The candidate contributes to the National Science Foundation goal of providing students with opportunities to participate in research activities outside the college or university setting and involving students at all levels with pioneering research.

Equipment list for the 2001-2002 Antarctic Scout

<http://www.scouting.org/boyscouts/resources/18-900/journal/journal/equipment.html>

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**Northern Tier OKPIK Winter Programs**

[www.ntier.org/okpik.html](http://www.ntier.org/okpik.html)

OKPIK (rhymes with Hook Pick) is the Inuit word for the Arctic, or Snowy Owl, and serves as the symbol for BSA High Adventure Cold Weather Camping and Outdoor Sports.

Learn the Skills of the Northwoods Winter...

CROSS COUNTRY SKIING  
SNOWSHOEING  
DOG SLEDDING  
MUSHER CAMP (primitive)

WINTER SHELTER BUILDING  
COLD WEATHER CAMPING  
TRACKING  
ICE FISHING

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**“ Top Ten Joys of Camping in the Cold of Winter”**

<http://camping.about.com/library/weekly/aa001026a.htm>

- |   |  |
|---|--|
| 1. Views are great without all the leaves | 6. Drinking water stays cold           |
| 2. You can eat more – you'll burn it off  | 7. You can walk on water (it's frozen) |
| 3. Snow covers rocks under the tent       | 8. NO crowds                           |
| 4. Fellow campers don't smell as bad      | 9. NO dirt                             |
| 5. You can practice the bunny hop         | 10. NO bugs                            |
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**MISCONCEPTIONS ABOUT WINTER CAMPING**

Boy Scout Fieldbook, No. 33200, 1996, pp. 331-367

“Leather hiking boots will keep your feet warm.

**FALSE** – The snug fit of most leather hiking boots can limit the circulation of blood in the feet, especially if you’re wearing extra layers of socks. Muckulks, booties, and overboots cut generously enough to hold your foot and plenty of insulation and still allow moisture to escape are much more effective.

An open fire is the best way to stay warm.

**FALSE** – If the heat of a fire warms you while you’re wearing winter clothing, the insulation effectiveness of the clothing may be suspect. Clothes able to protect you from the cold will also shield you from heat. Wearing the right clothing, eating plenty of energy rich foods, drinking large quantities of water, and bedding down in a cozy sleeping bag are much more dependable ways of staying warm than standing near a fire.

In cold weather, tasks can be done just as quickly as in warm weather.

**FALSE** – Every effort in cold weather takes much longer to complete than it would in warm conditions. Eskimos move with patient sure motion, allowing plenty of time to conduct their activities.

Sugary and starchy foods provide sufficient cold weather energy.

**FALSE** – Sugar and starch burn too quickly to keep you warm hour after hour. Foods high in fat, complex carbohydrates, and protein release their energy more slowly.

Drinking liquids is not important on winter treks.

**FALSE** – Cold air is very dry, and it draws moisture out of your body each time you breathe. Winter temperatures may trick you into believing you’re not thirsty, even though your body needs plenty of fluids to ward off the dehydration that can upset your metabolism and increase your susceptibility to hypothermia. Most people need 2-3 quarts of water per day.

Winter camping does not require much preparation.

**FALSE** – Arctic conditions exist when the wind is blowing and the temperature is 20 degrees F or lower. There are only seven states in the U.S. that do not experience weather this cold at least part of the year, and so it is extremely important to prepare adequately – and in fact to overprepare – whenever you camp in winter. Learn what to expect in severe weather, and then take positive steps to acquire the necessary knowledge, skills, and equipment to meet the challenge.

Mental attitude has little to do with winter camping.

**FALSE** – A positive mental attitude is the most important ingredient in the success of cold-weather trips. The demands of winter will occasionally drain your energies, and you’ll have to rely on yourself to keep your spirits high.”

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**First Aid Tips and Cold Weather Camping**

Hypothermia and Frostbite – if someone in your group is a victim of hypothermia or dehydration, others in the group may also be at risk – assess everyone. Everyone needs to put on dry clothing and get something to eat and drink while the victim is being treated. **Use the Buddy System!**

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**COLD WEATHER FIRST AID**

<http://camping.about.com/gi/dynamic/offsite.htm?site=http%3A%2F%2Fwww.netwoods.com%2Fdocument%2Fcoldhnt3.html>

**“Dehydration** - Excessive loss of body water. Impairs the ability to reason, so the victim may not react properly.

Prevention:

- \* Drink at least 2 quarts of water a day.
- \* Avoid dehydrating foods (high protein) and fluids (coffee, caffeine).
- \* Increase fluid intake at first signs of darker yellow urine.

Symptoms:

1 to 5 % deficiency

Increased pulse rate

Dark urine or constipation

Thirst

Nausea and loss of appetite

Irritability, fatigue

6 to 10 % deficiency

Headache, dizziness

Tingling

Inability to walk

Labored breathing

Absence of salivation

Cyanosis (bluish or grayish skin color)

11 to 20 % deficiency

Swollen tongue, inability to swallow

Shriveled, numb skin

Delirium, unconsciousness and death

Dim vision, deafness

Painful urination

Treatment:

Mild cases - drink liquids, keep warm.

More severe cases require professional medical treatment.

**Hypothermia** - Lowering of the inner core temperature of the body [to below 95 degrees F]. Can and usually does happen above freezing. The victim may not recognize the

symptoms and may not be able to think clearly enough to react. Injury or death may result. [Standard oral thermometers register only to a lower limit of 95 degrees F].

Predisposing Conditions:

- \* Poor physical condition.
- \* Inadequate nutrition and water intake.
- \* Thin build.
- \* Non-protective clothing.
- \* Getting wet.
- \* Inadequate protection from wind, rain and snow.
- \* Exhaustion.

Symptoms:

- \* Loss of ability to reason.
- \* Shivering.
- \* Slowing, drowsiness, fatigue.
- \* Stumbling.
- \* Thickness of speech.
- \* Amnesia.
- \* Irrationality, poor judgment.
- \* Hallucinations.
- \* Cyanosis (blueness of skin).
- \* Dilation of pupils of eyes.
- \* Decreased heart and respiration rate.
- \* Stupor.

Treatment:

- \* Shelter the victim from wind and weather.
- \* Insulate the victim from the ground.
- \* Change wet clothing.
- \* Put on windproof, waterproof gear.
- \* Increase exercise, if possible.
- \* Put in a pre-warmed sleeping bag.
- \* Give hot drinks, followed by candy or other high-sugar foods.
- \* Apply external heat; hot stones, hot canteens.
- \* Huddle for body heat from others.
- \* Place victim in a tub of 105° F water. Never above 110° F.

Prevention:

- \* Keep rested, maintain good nutrition.
- \* Consume plenty of high-energy food.
- \* Use proper clothing.
- \* Make camp early if tired, injured or lost.
- \* Get plenty of exercise. Don't sit around much.
- \* Appoint an experienced person to watch the group for signs.
- \* Take immediate corrective action for any signs.

**Frostbite** - Tissue injury involving the actual freezing of the skin and underlying tissues. Recovery is slow, severe frostbite can lead to gangrene. Once exposed the victim will be predisposed toward frostbite in the future.

Predisposing Conditions:

- \* Prolonged exposure to temperatures 32° F or below.
- \* Brief exposure at extremely low temperatures, -25° F and below.
- \* Exposed body parts
- \* Restriction of circulation.
- \* Fatigue, poor nutrition, low liquid intake, poor physical condition.
- \* Previous case of frostbite or other cold injury

Symptoms:

First Degree (“Frostnip”)

[most frequently occurs on the fingers, toes, ears, and/or nose]

- \* Redness, pain, burning, stinging or prickly sensation.
- \* Pain disappears and there is a sudden blanching of the skin.
- \* The skin may look mottled.
- \* Skin is firm to the touch, but resilient underneath.
- \* On thawing, there is aching pain or brownness. The skin may peel off, and the part may remain cold for some time.

Second Degree (Superficial Frostbite, Frostbite)

- \* No pain, the part may feel dead.
- \* Numbness, hard to move the part.
- \* Tissue and layers underneath are hard to the touch.
- \* After thawing (takes 3 to 20 days) pain, large blisters, sweating.
- \* Black or discolored skin sloughs off, leaving tender new skin.

Third degree (Severe Frostbite)

- \* Full thickness of the skin is involved.
- \* After thawing, pain continues for 2 to 5 weeks.

Fourth degree (Severe Frostbite)

- \* Skin[, deep tendons,] and bone are frozen.
- \* Swelling and sweating occur.
- \* Gangrene may develop, amputation may be necessary.

Treatment:

- \* Do not rub affected area with snow. Hold it over fire, or use cold water to thaw it.
- \* Exercise the affected area to promote blood circulation.
- \* Use any warmth available to thaw area.
- \* Do not attempt to thaw frostbitten limbs in the field. It is less harmful for the victim to walk out on a frostbitten limb than to thaw it in the field. Thawing only risks additional injury and the victim will be in too much pain to walk.

**\* Check for hypothermia.**

\* For more severe cases refer to more complete instructions.

**[Rewarming should not be started until there is no chance of refreezing.]**

Prevention:

- \* Proper clothing.
- \* Good nutrition, drink water, maintain core temperature.
- \* Use buddy system to check face, nose, and ears.
- \* Immediate treatment of minor symptoms.

**Snow Blindness** - Inflammation of the eye caused by exposure to reflected ultraviolet rays when the sun is shining brightly on an expanse of snow.

Symptoms:

Sensation of grit in the eyes, made worse by eye movement, watering, redness, headache, and increased pain on exposure to light.

Treatment:

Blindfold the victim and get rest. Further exposure should be avoided. If unavoidable, the eyes should be protected with dark bandages or the darkest sunglasses. The condition heals in a few days without permanent damage once exposure is stopped.

Prevention:

**Wear sunglasses when any danger is present. Do not wait for discomfort to begin.”**

adapted from: <http://www.macscouter.com/KeepWarm/coretemp.html>

“Winter Camping & Hypothermia - Systematic Hypothermia: Core Temperature”

By Kevin Hamilton [adapted by [78gator@mchsi.com](mailto:78gator@mchsi.com)]

Degree of Hypothermia	Signs and Symptoms	Cardiorespiratory Response	Level of Consciousness
95 F - Mild	[Intense] shivering Foot Stamping		Withdrawn
90 F - Mild	Loss of Coordination [pale, violent shivering]		Confused [ speech impaired]
85 F - Moderate	Lethargy [muscle rigidity - cannot shiver]	Slow Pulse	Sleepy [thinking is dulled]
80 F - Severe	[Stupor degenerating into] coma	Weak Pulse, Arrhythmias, Slow Respirations	[irrational behavior degenerating into coma]
78 F - Severe	Apparent Death	Ventricular fibrillation, cardiac arrest	[coma]

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### **Thermoregulation**

<http://camping.about.com/gi/dynamic/offsite.htm?site=http%3A%2F%2Fwww.netwoods.com%2Fdocument%2Fcoldhnt3.html>

“The body's process for maintaining an even temperature. The arms and legs are used as a radiator to remove excess heat from the body. This process dilates the blood vessels, allowing more blood to flow to the skin surfaces. When the body temperature drops, these blood vessels constrict, decreasing blood flow, and thereby, heat loss. This is why hands and feet get numb when cold, and why they're particularly vulnerable to frostbite. Since your brain needs oxygen to function, your body can't cut off the flow of blood to your head in order to conserve heat. Consequently, much of your body heat can be lost through an uncovered head and neck.

Radiation. (55%) A major source of heat loss. Heat is lost directly from exposed skin and the head. The head may lose up to one-half of the body's total heat production at 40 degrees F, and up to three-quarters at 5 degrees F.

Conduction. (15% with convection) Heat is lost through skin contact with cold objects, primarily the hands, and wet or tight clothing. Handling gasoline, and other super-cooled liquids, at low temperatures is especially dangerous.

Convection. Heat is lost from the wind carrying away heat from the surface of the skin. This includes wind-chill effects.

Evaporation. (21%) Loss from evaporation of sweat, moisture from the skin and lungs produces substantial heat loss. This is little that can be done about this. We need to allow for this by using breathable fabrics to allow this moisture to pass out freely.

Respiration. (2-9%) Heat lost from inhaling cold air and exhaling warm air.

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### **Fabrics** (Fieldbook, p. 42, Handbook, p. 205)

#### Wool

##### Fieldbook

“Wool is durable and water resistant, and even when soaked it can keep you warm. A wool shirt or sweater will ward off the chill of summer evenings, too. Wool makes excellent blankets, hiking socks, hats, and mittens. If wool irritates your skin, you may be able to wear wool blends or substitutes like polypropylene.”

[Wool usually doesn't retain body odors to the same degree as other fabrics]

##### Handbook

“Wool can keep you warm even when it is damp from rain. If wool feels scratchy against your skin, wear long underwear or a T-shirt beneath it.”

Cotton

Fieldbook

“Cotton is cool, comfortable, and sturdy, but unlike wool it will not keep you warm when it is wet. Of course, in hot weather that may be an advantage.”

Handbook

“Cotton is good for warm, dry weather. Once wet, though, cotton will not keep your warm. That can make it dangerous to wear on trips when conditions might turn chilly, rainy, or snowy.”

Synthetics

Fieldbook

“Manufactured fabrics such as nylon, orlon, and polypropylene have plenty of outdoor uses. Many are waterproof, and some are good insulation. Strong, lightweight, and easy to clean, they are used in rain gear, windbreakers, tents, packs, parkas, and sleeping bags.”

Handbook

“Many synthetic fabrics offer the comfort of cotton and the warmth of wool. Clothing made of polypropylene, polar fleece, and other modern materials can insulate you whether it is wet or dry. Look for these fabrics in long underwear, sweaters, vests, parkas, mittens, and hats.”

Blends

Fieldbook

“Blended fabrics combine the advantages of several materials in a single piece of cloth. For example, a blend of synthetics and cotton makes shirts and shorts that are neat in appearance, yet tough enough for any wilderness adventure. A mixture of synthetics and wool goes into long-wearing socks, shrink-resistant shirts, and warm jackets.”

**Clothing Checklists for Hiking, Camping, and Backpacking**

Boy Scout Handbook, p. 203-4.

<b>Warm-Weather Clothing List</b>	<b>Cold-Weather Clothing List</b>
Short-sleeved shirt	Long-sleeved shirt*
T-shirt	Long pants*
Hiking shorts	Sweater*
Long pants	Long underwear*
Sweater or warm jacket*	Hiking boots or sturdy shoes
Hiking boots or sturdy shoes	Socks
Socks	Insulated parka or coat with hood
Hat with brim for shade	Warm hat*
Bandanna	Mittens*
Rain gear	Rain gear
Extra underwear (for longer trips)	Extra underwear (for longer trips)

Items marked with an asterisk (\*) should be made of wool or a warm synthetic fabric.

### Layering

Boy Scout Fieldbook, p. 43

“For the most comfort in the outdoors use the layering system. Choose loose-fitting clothing that will meet the most extreme weather you expect to encounter, and be sure you can put it on and take it off a layer at a time. For example, on a chilly autumn day you might leave home wearing a long-sleeve Scout shirt, long pants, a wool shirt, a sweater, mittens, and a stocking hat. As you hike, exercise will cause your body to generate more heat than it needs. Peel off the sweater and stuff it into your pack. If you’re still too warm, unbutton the wool shirt or slip off the mittens and hat.

When you reach your campsite and are no longer exerting yourself, stay warm by reversing the procedure, pulling on just enough layers of clothing to stay comfortable. After the sun goes down, you may want to add an insulated parka and wool trousers or long underwear.

You can also use the layering system to keep cool in the summer by stripping down to hiking shorts, a T-shirt, and a brimmed cap. Despite the heat, always carry long pants and a long-sleeve shirt for protection against sunburn, bugs, and brush.

Versatility in your clothing is the key to a successful layering system. Several shirts, a sweater, and a jacket will allow you to adjust your garb in many more ways than will a single heavy coat.”

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### **“Layering For Winter – How to dress smart and stay warm when Old Man Winter blows in.”**

Adapted from *Backpacker’s* “Making Camp”, by Steve Howe et al., December 1997

“Winter clothing keeps you warm primarily by trapping warm air next to your body (insulation). But when being active in winter and spending multiple days in the same clothes, insulation alone is not enough. It has to stay dry, not just from the outside in, but from the inside out. This is where specialized outdoor clothing is literally a lifesaver. Wearing cotton or other moisture-retaining fabrics puts you at risk for serious heat loss.

Any moisture that remains in your clothing quickly conducts body heat straight to the atmosphere. **This means your active clothing (as opposed to the super-warm down jacket that you only wear in camp) must not retain perspiration;** instead it must quickly transfer body moisture to your outermost layer, where it can evaporate. The key is to wear layers made of synthetic, quick-drying material that helps evaporate your sweat. That way, your clothes aren’t wet enough to transfer a significant amount of heat away from your body.

The advantage to layering, of course, is that when working hard and starting to overheat, you can simply take off an insulating layer (usually a fleece jacket or vest), replace your

windproof shell, and you're on your way. When inactive and cooling down, you can replace the insulating layer.

From bottom to top, here are the layers you should include in any cold-weather travel:

Underlayer:

- \* Two pairs liner socks (thin, quick-drying)
- \* Liner gloves
- \* Synthetic underpants
- \* Synthetic long underwear tops and bottoms

Insulating layer 1:

- \* Thick insulating socks (one pair per day)
- \* Synthetic pants
- \* Synthetic shirt

Insulating layer 2:

- \* heavy gloves or mittens (mittens conserve heat better); plus extra pair in case one is lost
- \* Fleece pants
- \* Fleece vest

Outer layer:

- \* Down jacket, preferably with waterproof/breathable outer material
- \* Shell pants, waterproof/breathable
- \* Shell jacket with hood, waterproof/breathable
- \* neck gaiter or scarf
- \* shell mittens of waterproof/breathable material
- \* hat (fleece or wool)
- \* brimmed cap for warm, sunny days
- \* boots, waterproof and roomy enough for thick socks and toe-wiggling to prevent frostbite
- \* gaiters
- \* goggles (for wind and snow)
- \* sunglasses, sunscreen and lip balm with sunblock

**Fleece offers more warmth for the weight than wool**, but some still prefer good old wool. **Goose-down is the warmest for the weight**, and should be included for rest stops and while hanging around camp, so that you can maintain a constant body temperature between exercising and resting. It also compresses easily for stuffing into a pack. But don't break a sweat while wearing it; it dries poorly and won't keep you warm when it's wet the way fleece or other synthetics do.

With today's synthetic clothing, socks are the only thing you need to change in the backcountry (**dry feet are absolutely essential to preventing frostbite**). Bring a pair of insulating socks for each day, ideally with a plastic bag for storing each separately.”

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### **Keeping Warm**

<http://www.theozarks.com/WinterCamping.htm>

“Keeping warm is the most important part of cold weather camping. Use the C-O-L-D method to assure staying warm. [Actually, this appears to have been adapted from the **Boy Scout Fieldbook**, p. 336]

#### **C - Clean**

Since insulation is only effective when heat is trapped by dead air spaces, keep your insulating layers clean and fluffy. Dirt, grime, and perspiration can mat down those air spaces and reduce the warmth of a garment.

#### **O - Overheating**

Avoid overheating by adjusting your layers of clothing to meet the outside temperature and the exertions of your activities. Excessive sweating can dampen your clothing and cause chilling later on.

#### **L - Loose Layers**

A steady flow of warm blood is essential to keep all parts of your body heated. Wear several loosely fitting layers of clothing and footgear that will allow maximum insulation without impeding your circulation.

#### **D - Dry**

Damp clothing and skin can cause your body to cool quickly, possibly leading to frostbite and hypothermia. Keep dry by avoiding cotton clothes that absorb moisture. Always brush away snow that is on your clothes before you enter a heated area. Keep the clothing around your neck loosened so that body heat and moisture can escape instead of soaking several layers of clothing.

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### **Vapor Barrier Systems** [An Alternative to Layering]

[http://golite.com/intheworld/coups\\_scoop/archive\\_coupscoop\\_02\\_02.html](http://golite.com/intheworld/coups_scoop/archive_coupscoop_02_02.html)

#### **COUP'S SCOOP Diaries of a Fanatic #14 February 2002 ULTRA-BARRIERS**

“Vapor barrier clothing and equipment has been around for years. Some swear by vapor barriers; some swear at them. You've probably heard about vapor barriers, but maybe never took a minute to learn what they're all about. No time like the present.

Traditional layering systems move moisture quickly from your body, through your insulation, and into the atmosphere, keeping you dry. This works well in mild conditions, and it can also work well in the cold. But there is another way that can work even better in the deep freeze: the vapor barrier system.

Instead of moving moisture away from your skin, vapor barriers keep moisture on your skin. Here's why: our bodies emit two kinds of sweat - sensible perspiration and insensible perspiration. Sensible perspiration is the drippy smelly stuff that pours out in buckets as you charge too hard up-hill. Insensible perspiration is an unseen, unfelt, lower level of perspiration that your body constantly emits in dry air to keep your skin moist and comfortable.

Very cold air tends to be very dry, so **winter brings out high levels of insensible perspiration**. The direct **cooling effect of the moisture evaporating** off your skin is bad enough, but you also **soak your insulation**. Then the moisture freezes in your insulation. And you **dehydrate rapidly**, too. Then you're really bummed.

Vapor barriers not only keep insulation dry, they also dramatically reduce the rate at which you perspire. Your body only emits insensible perspiration to keep your skin moist. **Once a vapor barrier is placed on or near your skin, insensible perspiration virtually stops**. You dehydrate far less rapidly - critical in situations in which drinking water is hard to come by.

Having experimented with vapor barriers over the years in conditions ranging from +60°F to -40°F, I have come to the very same conclusions as most other people who have used vapor barriers:

- 1) Vapor barriers are only for the cold – sub freezing at least
- 2) Vapor barriers are clammy right against the skin but totally comfortable over just one thin base layer
- 3) Vapor barrier socks work very well (virtually everyone uses them on the world's biggest mountains), shirts and sleeping bag liners can work well for many, and pants only work for a few
- 4) Vapor barriers are worth their weight in the deep cold; a few ounces can add 10-20°F of warmth to clothing and sleep systems
- 5) Except for socks, vapor barriers only work well if you adjust your insulation frequently so that you are neither too hot nor too cold
- 6) If you are wearing a pack in the cold, the best vapor barrier can be one that is against your back only, so that you don't soak your pack and the insulation on your back and freeze at every rest stop.

**To learn more, get a copy of Glenn Randall's book Cold Comfort, which contains the best chapter on vapor barriers I've ever read."**

Demetri Coupounas

More information about vapor barriers can be found at:

<http://www.princeton.edu/~oa/winter/wintcamp.shtml>

**“There is no doubt that vapor barrier systems are effective for some people in some conditions. The issues you must consider before using a vapor barrier are activity level, amount you naturally sweat, and "moisture comfort". If you are not active, such as when using a vapor barrier liner at night in a sleeping bag, the system will work well. A vapor barrier sleeping bag liner will typically permit you to sleep comfortably in temperatures 10 - 15 degrees colder than in the bag alone.”**

<http://www.warmlite.com/vb.htm>

**WARNING – THERE IS AN OCCASIONAL EXPOSED BREAST AND/OR BUTTOCK ON THIS SITE**

This site contains a detailed explanation of how vapor barriers work.

**Will Steger used “breathable” Quallofil sleeping bags for his much advertised dog sled trip to the north pole: those 17 lb. bags (almost as thick as our 4 1/2 lb Goose Down bags) were carried loose on top of sleds “for best drying”, yet weighed over 52 lbs. in a few weeks from sweat condensing to ice... Meanwhile a Canadian - Soviet team cross country skied across the pole, using WARMLITE bags they had purchased, which stayed dry and warm for the whole trip.”**

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### **Not convinced? Try this test!**

<http://www.icomm.ca/survival/vapor.don/use.htm>

“For those of you not convinced of vapor barriers, try this approach. Use the above bread bag approach on one foot, and just wear your standard sock on the other foot. Next go out and play in the cold and see which foot is more comfortable!”

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### **Clothing Recommendations**

<http://www.theozarks.com/WinterCamping.htm>

#### **Footwear.**

As with other clothing, the layer system is also the answer for foot-wear. Start with a pair of silk, nylon, or thin wool socks next to your skin. Then layer on several pairs of heavier wool socks. When and if your feet become damp, change into another pair of dry socks at the first opportunity. Rubber overboots will protect the feet from water and will allow more comfortable shoes to be worn within.

#### **Mittens and Gloves.**

Mittens allow your fingers to be in direct contact with each other. They will keep your hands warmer than regular gloves that cover each finger. Select mittens that are filled

with foam insulation, or pull on wool gloves and cover them with a nylon overmitt. Long cuffs will keep wind and snow from getting in.

### **Headgear.**

The stocking hat is the warmest thing you can cover your head with in cold weather. Get one that is large enough to pull down over your ears. Also ski masks are great in the winter and can help in keeping your neck and face warm as well. Noses and ears can be very easily frostbitten, so a scarf can be an invaluable item to have. A "TIP" from my Grandfather, "**If your feet are cold, put on a hat.**"

### **Parka and/or Overcoat.**

Your coat or parka is the most important piece of your winter clothing. It needs to be large enough to fit over extra clothing without cutting off blood flow, and allowing ventilation to keep moisture away from your body. A large permanently attached hood will prevent heat loss around your head and neck.

### **Sleepwear.**

**Never, if it is at all possible, should you sleep in the same clothes that you have worn all day. They are damp and will cause you to chill.** This could cause frostbite and hypothermia. It is advised that you bring a thick pair of sweats and thermal underwear to sleep in. Keep the thermals and sweats for sleeping in only. Do not wear them during the day, this will keep them the driest. Also be sure to have a couple of layers of wool or heavy thick cotton socks on as well. Always sleep with a stocking hat on your head. Your sleeping bag needs to be a winter rated bag...It is also a very good idea to have some kind of sleeping mat to use in the winter... In cold weather camping you never want to sleep on an air mattress or off the ground in a cot. The air under you will cool you off in no time and this would create a threatening situation. If you don't have a sleeping mat, bring a spare wool or natural fiber blanket to use as a ground pad under your sleeping bag. **The sleeping mat is worth its weight in gold.**"

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### **Food and Water**

<http://www.princeton.edu/~oa/winter/wintcamp.shtml>

“Planning food for winter activities must take into account the great demands the cold weather and physical activity placed on the body along with the difficulty of preparing foods in the winter (it takes time, stove fuel) and having a menu which appeals to the group). Appetite is generally reduced during winter activity even though the food needs of the body have increased. If the meal isn't appealing, it won't get eaten. In some situations you literally need to force yourself to eat.

### **Food types**

All foods are made up of varying proportions of the three basic food types - **carbohydrates, fats, proteins**, and water, vitamins and minerals. Each of the three major types can be converted into simple sugars and burned by the body to produce energy but

the time required for conversion increases as the complexity of the molecule increases, so carbohydrates are quicker to convert than proteins and proteins quicker than fats.

<b>Dietary Percentage for Winter Camping</b>	<b>Food Type</b>	<b>“Nickname”</b>	<b>Description</b>
50%	Simple Carbohydrates	Kindling	1,800 cal/lb – released quickly Candy, cereal, bread, rice, macaroni, dried fruit, vegetables
	Complex Carbohydrates	Sticks	
20%	Proteins	Logs	1,800 cal/lb – generally released slowly. Proteins are primarily used for maintenance and building of body tissue. Meat, fish, cheese, milk, eggs, nuts, grains
30%	Fats	Logs	4,100 cal/lb – released very slowly but are useful because they release heat over a long period. However, it takes more energy and more water to break down fats into glucose. Margarine, nuts, cheese, eggs, and fats from pepperoni, salami

**Vitamins and Minerals** - are generally found in most foods we eat and for a trip less than 7-10 days no special resources are needed. For longer trips and expeditions vitamin and mineral supplements are necessary. See a physician to get specific recommendations for expeditions.

### **Caloric Requirements**

General caloric requirements increase in the winter due to the energy expended in keeping the body warm. Caloric requirements for different activity levels are summarized below.

<b>Activity</b>	<b>Caloric Requirement (kg-cal/day)</b>
Basal metabolism	1,500 calories
Sedentary occupation	2,500 - 3,000 calories
Three season backpacking	3,500 - 4,000 calories
Winter backpacking	4,500 - 5,000+ calories

Keep in mind that there are definite individual variances on these figures based on age, body metabolism, health, etc.

## Meals

Avoid taking fresh food in the winter (fresh fruit, vegetables, eggs). These all contain water and weigh a lot (and you have enough to carry). The exception to this is cheese, butter, or meats (needed for their high fat content). Take mostly dry foods (cereal, pasta, rice, wheat, oatmeal), baked goods (brownies, cookies), or freeze-dried foods (expensive but very lightweight and quick to cook which can save on stove fuel).

### **1. Breakfast**

This should not be a complicated meal but should be a complete one since it supplies the foundation for a full day's work. Time is also a factor since you probably want to get up and moving. Just standing around in camp in the early morning (cold) hours only leads to cold feet and bodies. Since the easiest thing to cook is water it is best to go for items which can be made in each individual's cup. [This reduces clean up] Suggestions include: instant oatmeal with hot milk & margarine, hot Tang, Granola with hot milk, hot Jello, hot chocolate with extra milk & margarine.

It is best to supplement some of these items with extra powdered milk to add additional protein and margarine for fats. This is the meal to be careful not to dump too much sugar into the bloodstream at once, but rather to eat a good mix of all three major food types. The sugars will get you started and the proteins and fats will keep you going through the morning.

### **2. Lunch**

There are two approaches to lunch on a winter trip.

One is to stop for a traditional lunch and take a long break. This means cessation of activity which can lead to people getting cold. Additional layers would need to be put on and taken off. All of this adds up to a lot of time. But this also allows time for exploring an area and taking it easy. You can break out the stove and cook up a hot meal if you like.

The other approach is carrying a personal lunch which can be eaten throughout the day, at scenic points, water stops, clothing breaks, etc. The second approach minimizes the amount of time people would be standing around, but also doesn't provide a major rest stop.

In both cases you should include all the food groups by having some of the following items: meats, cheeses, nuts, dried fruit, raisins, cookies, candy, granola bars.

In the case of an "eat through the day lunch" a general formula is to take the following per person per day:

1/2 - 3/4 lb. GORP - raisins, peanuts, M&M's, sourballs coconut, chocolate morsels etc.  
1/4 - 1/2 lb. Lunch Meat and/or Cheese - cut into bite size chunks so you don't break your teeth

Other items include cookies, brownies, peanut butter, bagels, etc.

### **3. Dinner**

It is often good to start dinner with an instant soup or a hot drink that can be made in each persons' cup. This gives some internal warmth while waiting for the main course. In the winter, the main dish is usually some form of one pot glop/stew. This is to save time and stove fuel. A glop starts with a soup or gravy base, and includes a starch (rice, noodles), some vegetables (frozen vegetables keep well on winter trips), whatever protein you are carrying (lunch meat, cheese, canned chicken, tuna). This should be spiced to make it tasty. Remember, at the end of the day you will be more tired than hungry and having an interesting meal is essential to get you to eat.

The other approach to dinner is freeze-dried foods. These have the advantage of simply adding the dish to boiling water so less fuel is needed and they weigh very little. There are a number of companies offering these items. They are generally more expensive than what you would pay for basic staples like rice & noodles. Be aware of portion size. Some companies give an unrealistically high estimate on how many their meal pack will feed.

The meal is concluded with hot drinks (tang, tea, hot chocolate, Jello etc.) and possibly dessert. At the end of the meal water should be melted/heated up for personal water bottles at night. (See water section below).

Dehydrated foods (which are different than freeze dried are not recommended because they require large quantities of water to rehydrate them.

### **4. Food for sleeping**

You need to take some of your lunch for the next day to bed with you. This allows fresh items like the meat and cheese to thaw. If you wake in the middle of the night and are cold (or just before you go off to sleep) it is best to eat proteins. The protein will be broken down more slowly so the heat will be released over a longer period of time. If you eat a sugar, you will get a quick "heat high" and then your body temperature will drop back down, sometimes falling below its previous level.

### **5. Utensils**

All the personal utensils you will need is a large plastic cup (insulated if possible) and a plastic spoon. (Do not bring metal utensils in winter). It is also recommended that you tie an idiot string between the cup and the spoon. Cleaning these utensils is generally only scraping out the remainder with snow. Anything left will be part of your next meal.

### **6. Food Packing**

You will need to repack you food to minimize the amount of trash you bring in with you. It is best to combine food items by meal or type into separate stuff sacks (breakfast bag, lunch bag, dinner bag, hot drink & dessert bag). Label them or color-code them so you can easily distinguish them.

## **7. Winter Water**

Do not eat snow! It takes an incredible amount of energy to transfer water from one state to another (solid to liquid). You are burning up too many calories to do this which can quickly lead to hypothermia.

Water may be obtained by digging a hole in frozen lakes or streams where there is running water beneath the ice. Be careful about falling in. Remember, in most cases water will need to be purified from Giardia and other bacteriological contaminants (see below).

Snow can be melted on a fire or stove to make water. It should be clean snow, no yellow (urine) or pink (bacterial growth). Because it takes so much energy to convert from one state to another you should have some water in the bottom of your container. Heat this water up and add snow to it slowly so it turns to slush and then water. This is much more efficient. If you dump in straight snow, you will only burn the bottom of your container and not make any water. By volume it takes about 10 quarts of snow to make 1 quart of water. Snow does not need purification.

**Personal Water** - You should have a water bottle with a wide mouth, otherwise the opening will easily freeze up. During the day you should carry at least one bottle next to your body (usually with a shoulder strap arrangement). Your body heat will keep it from freezing and the bottle is handy to rehydrate yourself throughout the day. Insulated water bottle holders are available for this. Other bottles can be kept upside down in an insulated container (sock etc.) preferably in an outside pocket on your pack. Being upside down will keep the mouth of the bottle from freezing. Keep in mind that the lid must be on tightly or water will leak all over the place. A cold water bottle may have ice crystals in the threads. As the bottle heats up from body temperature the ice may melt causing the cap to loosen also the lid may expand with heat causing leakage. At night keep your water bottles in your sleeping bag to prevent them from freezing.

**Getting Water** - sometimes filling pots and water bottles from a stream or lake is a major expedition in itself. Make sure that the area you plan to get water from is secure. Avoid steep banks that might lead to a plunge and make sure any ice is sufficiently stable to hold your weight. Also make sure you don't get your mittens soaked with icy water. A loop of string tied tightly around the water bottle neck will allow you to lower a bottle in by hand or with a ski pole or ice axe. Don't trust pot grips on a large pot, with mittens you can lose your grip and your pot. Fill the pot up part way and then use a water bottle to top it off. Mark the area so you can find it next time.

**Water purification** - keep in mind that water gotten from streams in the winter time may have bacteriological or other contaminants. You should check with local rangers about any water problems before going in. If the water does need to be purified, the best methods during the winter are either:

**Boiling** - for at least 3-5 minutes (add 1 minute for every 1,000 feet above sea level so that at 10,000 feet you are boiling for 15 minutes). **This is the best method in winter situations.**

Less Effective Methods:

Filtration- using a filtration pump system such as the PUR, First Need, or the Katadyn is not recommended in subfreezing temperatures. Keep in mind that the water in filters can freeze preventing them from working. Also, as the water freezes, it expands and may crack the filter, rendering it inoperable or even worse transmitting harmful microorganisms into your system. For these reasons, filters should be used with great caution in the winter. Be careful of inferior filters which do not strain out many organisms.

Chemical treatments (iodination or chlorination) are not recommended because they become ineffective at low temperatures. Only use these methods if the water has been preheated to about 60 degrees Fahrenheit.”

From "*Passport to High Adventure*", No. 4310, © 1997, p. 77.

Concentration of halogenon	Contact time in minutes at various temperatures		
	5 degrees C (41 F)	15 degrees C (59 F)	30 degrees C (86 F)
2 ppm	240	180	60
4 ppm	180	60	45
8 ppm	60	30	15

**Leave No Trace Camping in Winter**

<http://www.princeton.edu/~oa/winter/wintcamp.pdf>

“Winter generally provides a blanket of snow which protects underlying soil and vegetation, the major concerns for minimizing impact. However, when thin snow cover is compressed and compacted in early or late season, snowmelt can be delayed, shortening the growing season. Also, early and late winter trips can run into melting conditions, where top layers of soil melted by the sun lie ovetop frozen ground. Erosion, and destruction of plant life is extremely likely at these times, and winter travel is best avoided. Otherwise travel in small groups and visit either remote places where your disturbances won't be compounded by others following you (allowing for recovery) or high impact areas that have already been disturbed. Special considerations exist for high altitude and glacier conditions.

**Backcountry travel and camping**

Winter clothing and equipment, even when "natural" colored will show up well against the snow. Brighter colors can be a safety measure, as people and equipment can easily be

lost in a winter storm. Since there are less people out in the winter, the visual impact is less.

Winter is an exceptionally quiet season in the backcountry. Travel quietly and avoid excess commotion at your campsite.

One of the greatest impacts can be on wildlife. Animals in the winter have limited food supplies and are often stressed to their limits to survive. Being disturbed by backcountry travelers can drive them away from food sources, require them to use more energy, and can lead to death. Animals may seem more "approachable" in the winter. This is because they are trying to conserve energy. **Do not approach wildlife too closely.**

### Camping

- \* Tent, igloo and snow cave sites should be selected away from trails and open bodies of water if possible.
- \* All campsites and cooking areas should be disguised when you leave so that accidental stains are covered, and so that camping areas will be undetectable after 2 - 3 inches of snow has fallen.
- \* Large snow structures such as igloos and snow caves can be left intact, as long as the rest of the camping area is well camouflaged. Occasionally these snow structures can be used again by other grateful winter travelers.
- \* Camp away from animal feeding, watering, and bedding areas.
- \* Fires - Under winter conditions, it can be difficult to build a disguisable fireplace or to gather wood by acceptable means. Since any downed wood is under the snow and possibly wet, wood is both difficult to find and may not be usable for a fire. Gathering wood from live trees can have significant impacts on an area especially at high use sites. Therefore, one should carefully examine the location, the ecosystem, and the ability to clean up the site after the fire before deciding to build one. Obviously, in a real emergency, a fire might need to be built in spite of the impact it might have on the environment

Sanitation - Lack of sunlight and cold temperatures retard the decomposition of fecal material.

- \* Maximizing sunlight will help but will leave a visual impact if others are in the area. The best solution is to dig a cathole in just below the surface of the snow. Keep in mind that after the thaw, the feces will be resting on the ground. So pick a cathole site far from any water, summer trails, or summer camping areas. Locate a site with as much ground cover (grass or forest downfall), and as little slope as possible to minimize washing into surface water, and maximize feces-soil contact.
- \* For maximum fecal dispersion, persons should make personal holes as needed. There is no reason for a group's waste to be deposited in one place. Head away from camp. Snow should be kicked over urine stains to prevent the "yellow snow" effect. Toilet paper can be a problem in the winter. Burning it once it has hit the snow is very difficult. You can burn it in a tin can or pack it out. A better idea may be to use snow or ice (although powder snow is difficult to use).

- \* You almost never need to wash pans in the winter. A simple scouring with snow will freeze all particles. They can be packed out with garbage (or left for the next meal). Ending dinner with hot drinks usually takes care of any food particles. Water left over from pasta is full of carbohydrates and makes good drink water. If you do have leftover cooking water, solid food waste should be strained out of the water and packed out. The water should be concentrated in sump holes far from water sources to prevent massive unsightly stains on the snow. The sump holes should be covered when breaking camp. Leftover grease will cool to a solid and can be carried out. Minimize all solid food since animals will often dig up sump holes.
- \* Litter is especially difficult to check in the winter when dropped items can be lost so easily in the snow. Special attention should be given to plastic bags, white toilet paper (use colored or better unbleached, or use snow or ice), candy wrappers and candle wax. Candy wrappers should be removed from all candy before leaving town to prevent accidental litter. Candle wax should be caught in a cup and packed out.”

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### Winterize Your Camping Habits

“Tips to take with you when the snow flies”

Adapted from Making Camp, by Steve Howe et al., *Backpacker Magazine*, (The Mountaineers, 800-553-4453, [www.backpacker.com/bookstore](http://www.backpacker.com/bookstore), \$16.95)

#### Equipment

- \* Consider using sled to drag extra-heavy winter pack
- \* Bring a shovel to build wind barriers or snow shelters; compress entire camp area with boots for smooth sleeping and cooking
- \* Bring repair kit for ripped packs or tents: Wrap duct tape around ski poles for storage; bring heavy thread and needles; spare pole basket; wire and pliers to fix snowshoes

#### Setting up camp

- \* Face tent toward morning sun but only if away from blowing wind and snow
- \* Anchor tent guy lines with snowshoes, buried tent stakes, sticks, or a loop around a packed mound of snow (bollard)
- \* When snowing, even over night, tap on tent walls; dig out tent sides to prevent collapse

#### Sleeping

- \* Keep water bottles thawed in bottom of sleeping bag overnight
- \* **Consider a vapor barrier liner (vbl) for your sleeping bag** (keeps in heat with your body moisture). Lowers bag rating by 10 degrees, but must wear long johns to wick moisture from skin
- \* Use extra foam sleeping pad under your regular pad at night
- \* Go on a mini-hike before bed to raise body temperature

#### Miscellaneous

- \* **Keep batteries in inner pocket to prevent freezing.**
  - \* Change to dry underlayers if sweating upon arrival in camp
  - \* Rehydrate often to stay warm; evaporation of sweat lets you forget you need water”
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### “Welcome To The Deep Freeze”

Schurke, a.k.a. The Iceman, loves to tell his students, "Cold is an outstanding teacher." Here are some lessons he's learned from his chilly mentor.

By Jeff Rennie, *Backpacker* Midwest Editor, December 1997

#### “Before You Go

- \* **Introduce yourself to winter travel and camping through short overnight trips.**
- \* Plan an itinerary that offers "escape routes."
- \* **Test all of your gear at home;** -30°F is no time to realize your stove doesn't work.
- \* **Check the local weather forecast.**

#### On The Trail

- \* **Remember the "3 Ws" (wicking, warmth, and wind) of layering.** The layer next to your skin should be polypropylene, which wicks away moisture. Next, pull on a fleece layer to trap body-warmed air. Finally, zip on a tightly woven, breathable, windproof layer that lets moisture out but keeps warmth in. In extremely cold conditions, add another warmth layer.
- \* The same "3 Ws" apply to your hands (thin polypropylene gloves, warm mittens, breathable outer shell) and your head (thin wicking hat first, warm hat, hood for wind protection).
- \* **Add fat zipper pulls** to your gear so you can undo zippers while wearing mittens.
- \* Keep a supply of quick-energy foods, such as hard candy, handy.
- \* **Drink plenty of water and sports drinks.** Dehydration can lead to headaches and cold extremities.
- \* Bring two pairs of felt liners for your boots; one for daytime use, the other for around camp.

#### At Camp

- \* Choose a **campsite sheltered from the wind.** Because cold air sinks, a hillside campsite will be warmer than one on a valley floor. **An eastern exposure will give you direct morning sun.**
- \* Change into dry, warm clothes as soon as possible to keep from getting chilled.
- \* Stand on your sleeping pad (only if it's a closed-cell foam pad) to keep cold from seeping up from below.
- \* **Chop, slice, dice, and remove excess packaging from foods before you leave home.** This reduces the number of chores that require you to remove your gloves. Keep food preparation simple.
- \* Insulated cups or cup wraps keep drinks hot longer.

#### In Bed

- \* **Your sleeping bag will absorb several hundred calories' worth of body heat during the first few hours of the night** to bring it up to sleeping temperature. So, do jumping jacks or take a hike before bed—anything to raise your core body temperature to start the night warm.

- \* Use two sleeping pads under your sleeping bag. A self-inflating foam mattress together with a closed-cell foam pad makes a warm, comfortable combination.
  - \* **Sleep on top of your parka and insulated pants.** Put your gloves, socks, boot liners, and tomorrow's clothes inside the sleeping bag.
  - \* Wear warm, loose-fitting layers to bed. **Always wear a hat.** Booties worn with clean, dry socks help keep feet cozy.
  - \* **Vent your tent.** Leave one door partially open at the bottom and a second door or window slightly open at the top to allow cross ventilation and minimize frost buildup.
  - \* Slip a hot water bottle inside your bag, but be sure the lid is tight.
  - \* **Flare open boots as wide as possible** so you can slip them on more easily in the morning when they're frozen.
  - \* When nature calls, don't hold it. Keeping fluid at body temperature uses up energy better spent warming your body. A **pee bottle** can save you a nippy trip outside of the tent.
  - \* Keep some high-energy food handy for **midnight snacking.**
  - \* Be careful not to breathe inside your bag. Humid breath can lead to frost buildup.”
- 

### Winter tree identification

*A Key to Missouri Trees in Winter*, Jerry Cliburn and Ginny Klomps, revised 1990, \$3 at the Springfield Nature Center

This book is generally a dichotomous key (divided into evergreens, deciduous, and oaks) and identifies native trees and large shrubs using their twigs and a 10X magnifying glass, a sharp pocket knife, and a ruler.

Definition of terms used in winter-time tree identification:

Buds (leaves +/- flowers) – terminal vs. lateral (alternate, opposite, or whorled)

Bud scales (present or absent)

Leaf scar – the corky place of attachment left when the leaf falls in autumn.

One to several small dots or lines (usually only seen with a magnifying glass) called bundle scars may be seen on the surface of the leaf scar.

Stipules – small leaf-like structures occurring in pairs at the base of the leaf in some trees

Lenticels – small, sometimes warty dots scattered over the twig

Pith – central cylinder of tissue in the twig (in cross-section it may be round, oval, triangular, star-shaped, or variously lobed)

Other online sources:

Ohio – <http://hcs.osu.edu/osuetalks/009/> (36 slide PPT presentation)

Texas – <http://www.saforest.org/treeid.pdf>

Wisconsin (dichotomous key and tutorial) –

<http://www.treesfortomorrow.com/download/treeid.pdf>

Illinois <http://www.rversonwoods.org/p/wintertrees.html>

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***Guide to Safe Scouting – Chapter XIII. Winter Activities***

<http://www.scouting.org/pubs/gss/gss13.html>

“There is magic to camping in winter. It is one of the most advanced and challenging of outdoor adventures. Special considerations for winter camping include the following:

*Leadership* - In no other camp is the type of leadership as important as in the winter camp. It is vital that a leader be an experienced camper with a strong character.

*Equipment* - Do not attempt to camp unless completely outfitted. Even if equipment for winter camp is more expensive than for summer camp, Scouts must be adequately clothed, and leaders should ensure that blankets and other equipment are of suitable quality and weight.

*Physical Condition* - A physician's certificate as to physical ability must be obtained by each Scout before preliminary training begins.

**Tips for your next winter camping trip:**

Use the buddy system for winter outings. Buddies can check each other for frostbite, make sure no one becomes lost, and boost the morale of the entire group.

Plan to cover no more than 5 miles per day on a winter trek on snowshoes. An experienced group can cover 10 to 12 miles on cross-country skis.

Always allow ample time to make camp in winter, especially if you plan to build snow shelters.

Fatigue encourages accidents. Rest occasionally when building a snow shelter; taking part in cross-country skiing or snowshoeing; or participating in other active winter sports. Periodic rests also help avoid overheating.

Pulling a load over the snow on a sled or toboggan is generally easier than carrying it in a backpack.

Snow is a terrific insulator. Snow shelters are much warmer than tents because they retain heat and keep out the cold wind. If you have adequate time for building snow shelters, you will spend a much more comfortable night sleeping in them than in a tent.

Snow is the greatest thief in winter, swallowing up small dropped items. Tie or tape a piece of brightly colored cord to small items so they can be seen in snow. Some items, such as mittens, can be tied to larger items, such as a parka, to prevent them from being dropped and lost.

Melting snow in a pot to get water may cause the pot to burn through or may scorch the snow, giving the water a disagreeable taste. Prevent this by adding a cup or two of water in the bottom of the pot before putting in the snow to melt.

Punch a hole in the top of your ice chisel and string a stout cord through it. Before trying to chisel a hole in ice, anchor the cord to something large or too heavy to be pulled through the hole so you will not lose your chisel in freezing water when the ice is penetrated.

Always test the thickness of ice before venturing any distance from the shore. Ice should be at least 3 inches thick for a small group; 4 inches of ice is safe for a crowd. Since ice thickness can vary considerably, it is best to stay near the shoreline of large lakes.

Use alkaline batteries in flashlights. Standard batteries deteriorate quickly in cold weather. Tape the switch of your flashlight in the "off" position until you are ready to use it. This will prevent it from being turned on accidentally while in your pack or on your sled.

Encourage everyone in your group to wear brightly colored outer clothing so that each person will be more visible, especially during severe weather.

Small liquid-fuel stoves are much better for cooking in winter than fires, which are difficult to build with wet wood. Gathering wood that is frozen to the ground also can be difficult, if not impossible. A pressure/pump-type stove is essential in winter.

Always use a funnel to refuel a stove so you won't frostbite your fingers by accidentally pouring fuel on them. Fuel evaporates at a high rate of speed and quickly removes heat from anything it touches.

Place a stove or fire on a platform of logs or rocks so it will not melt through the snow.

Never light or use a stove inside a tent or snow shelter. A tent may catch fire, and a snow shelter may help lead to carbon monoxide poisoning. Neither of these potential mishaps is worth the risk.

A windscreen is essential for using a stove in the winter. Even a slight breeze will direct the heat away from its intended mark.

### **Winter Sports Safety**

Beyond camping, a number of cold-weather activities present challenges to the Scout and leader, such as cross-country skiing, ice skating, sledding, snowmobiling, ice fishing, and snowshoeing. Essential ingredients for fun include skill training and an awareness of the hazards unique to these activities. Snow conditions, hazardous terrain, special clothing needs, and emergency survival are important issues for a safe and successful experience.

Be sure your winter outdoor activity always follows these guidelines:

All winter activities must be supervised by mature and conscientious adults (at least one of whom must be age 21 or older) who understand and knowingly accept responsibility for the well-being and safety of the youth in their care, who are experienced and qualified in the particular skills and equipment involved in the activity, and who are committed to compliance with the seven points of BSA Winter Sports Safety. Direct supervision should be maintained at all times by two or more adults when Scouts are "in the field." The appropriate number of supervisors will increase depending on the number of participants, the type of activity, and environmental conditions.

Winter sports activities embody intrinsic hazards that vary from sport to sport. Participants should be aware of the potential hazards of any winter sport before engaging in it. Leaders should emphasize preventing accidents through adherence to safety measures and proper technique.

Suitable clothing for the activity and environment should be worn at all times, and equipment should include gloves and helmets when appropriate.

Winter sports activities often place greater demands on a participant's cardiopulmonary system, and people with underlying medical conditions (especially if the heart or lungs are involved) should not participate without medical consultation and direction. For participants without underlying medical conditions, the annual health history and physical examination by a licensed health-care practitioner every three years are sufficient. The adult leader should be familiar with the physical circumstances of each youth participant and make appropriate adjustments in the activity or protection as warranted by individual health or physical conditions. Adults participating in strenuous outdoor winter activity should have an annual physical examination. It is recommended that the medical assessment be performed by a licensed health-care practitioner knowledgeable of the sport and the particular physical demands the activity will place on the individual.

For winter sports such as skiing, snowboarding, snowmobiling, etc. that utilize specialized equipment, it is essential that all equipment fit and function properly.

When youth are engaging in downhill activities such as sledding, tobogganing, or snow tubing, minimize the likelihood of collision with immobile obstacles. Use only designated areas where rocks, tree stumps, and other potential obstacles have been identified and marked, cleared away, shielded, or buffered in some way.

All participants should know, understand, and respect the rules and procedures for safe winter activity. The applicable rules should be presented and learned before the outing, and all participants should review them just before the activity begins. When Scouts know and understand the reasons for the rules, they will observe them. When fairly and impartially applied, rules do not interfere with fun. Rules for safety, plus common sense and good judgment, keep the fun from being interrupted by tragedy.”

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### **Resources**

Boy Scout Fieldbook, , No. 33200, 1996, pp. 331-355.

Guide to Safe Scouting <http://www.scouting.org/pubs/gss/gss13.html>

Winter Games

<http://www.inquiry.net/outdoor/winter/activities/games/index.htm>

Midwest Scouting Winter Camping

<http://mwscouting.tripod.com/Links/SWinter.html>

*Winter Camping*

by Brian J. Murrey, Assistant Scoutmaster and Outdoors Activities Planner Troop 120 --  
brian@iquest.net -- Crossroads of America Council

<http://www.mwr.is/scouts/BSA/documents/Winter%20Camping.htm>

*Winter Camping Manual* by Brian Tomaszewski

[http://wnyliving.net/outdoors/winter\\_camping\\_manual.htm](http://wnyliving.net/outdoors/winter_camping_manual.htm)

*Cold Weather Camping*

Information gathered by Steve Tobin, SM Troop 39, Cannon Falls, MN

<http://camping.about.com/gi/dynamic/offsite.htm?site=http%3A%2F%2Fwww.netwoods.com%2Fdocument%2Fcoldhnt3.html>

*Winter Camping*

By David Ruffo Sr., Troop 380 Assistant Scoutmaster, Greater Cleveland Council.

[http://racereactions.about.com/library/weekly/aa012299.htm?iam=sherlock\\_abc](http://racereactions.about.com/library/weekly/aa012299.htm?iam=sherlock_abc)

*Outdoor Action Guide to Winter Camping* (29 page pamphlet in PDF format)

by Rick Curtis - <http://www.princeton.edu/~oa/winter/wintcamp.pdf>

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