



Winter Equipment List

Scouts are in the public eye! While traveling and returning home, wear:

- *Class A uniform including neckerchief and long pants*
- *Hiking boots and warm wool or acrylic socks (Thor-lo recommended)*

Carry the following items:

- Backpack
- Waterproof backpack cover
- Sleeping pad
- Warm mummy-style sleeping bag, rated down to 20 degrees Fahrenheit
- Several 2-gallon zip-lock bags (used to keep your clothes organized and dry)
- Heavy-duty vinyl poncho
- Small AA flashlight & 2 spare batteries
- Long johns: polypropylene or wool
- 3 underpants
- 2 t-shirts, preferably polyester!
- 4 heavy wool or acrylic socks. No cotton!
- Long-sleeved civilian shirt
- Long civilian pants
- Heavy sweater (wool or acrylic) or polyester fleece pullover. No cotton sweatshirts!
- Warm Coat, long enough to cover hips recommended
- Gloves—heavy duty, with extra insulation
- Stocking cap or fleece headband (gotta keep those ears warm)
- 2 bandannas
- Personal hygiene, medicine and first aid items
- Scout handbook, small notebook and pen
- 2 1-quart water bottles full of water
- Plastic hot-cup
- Large "Sierra" cup (this becomes your bowl and plate)
- Soup spoon (the only eating utensil you need!)
- 50 feet of parachute cord
- Eight aluminum tent stakes
- Toilet paper (in small zip-lock bag)
- 2 kitchen-sized garbage bags

Patrol Items to be distributed:

- *Tent & ground cloth (distributed between two men)*
- *Stainless patrol cook kit*
- *Spatula, spoon, measure, etc. kit*
- *2-quart patrol drink container*
- *Food (packed by meals in ziplock bags)*
- *2 kitchen-sized garbage bags*
- *Patrol dining fly*
- *Backpacking stove (or two, if needed)*
- *Matches—carried by Patrol Leader*
- *Wax & wood fire starters, if approved by Scoutmaster*

TROOP 39 COLD WEATHER COMFORT & SAFETY

With thanks to Scoutmaster Steve Tobin of Troop 39 (!!) in Cannon Falls, Minnesota

Cold weather camping as defined by BSA is "camping in weather where the average daily temperature is below 50 degrees Fahrenheit and conditions are cold, wet or windy." This may not sound very cold—but it is!

The single most important thing to remember about cold weather camping is to keep dry. Moisture will reduce the insulating properties of almost everything. To stay warm, remember the word COLD.

- C** Clean self and clean clothes.
- O** avoid **Overheating**.
- L** Loose Layers.
- D** stay **Dry**.

The hints listed below are in a random manner. There is no order of importance to the list, just some suggestions that have proven true to experts over the years.

CLOTHING

1. When you're active, you sweat. Hiking, gathering and chopping wood, putting up tents and the hundred other duties you do around camp use muscles, and in the process, you perspire. Perspiration droplets are minutely small, but will jump like a magnet to cotton. In Winter, wear polyester, acrylic, nylon and wool. These fabrics don't retain moisture, but "wick" the moisture droplets to the outside, where they evaporate in the dry, Winter air. This is why we wear Thor-lo socks, wool gloves, Polar Fleece jackets and polyester or polypropylene long-johns—not cotton.
2. Don't wear any kind of cotton clothing, sleep in cotton sheets or use a cotton flannel sleeping bag. Cotton absorbs and retains moisture, which is great if you're a bath towel—but lousy if you're trying to stay warm and dry. Cotton socks won't dry out, because "active" feet perspire one cup of water every day, whether Summer or Winter. Damp socks mean *painfully* cold feet. Cotton sweatshirts may look warm, but they're only warm until you sweat in them. Poplin jackets and flannel shirts are cotton, and cotton sweaters... well, they looked warm in the store, didn't they?
3. Wear several layers of lighter clothing instead of one heavy layer! This way you can better regulate your body temperature according to activity level and time of day. If you get warm you can take layers off and add some more clothing layers if you get cold.
4. Wear loose fitting clothing, to optimize insulation.
5. On windy days, a nylon outer layer will effectively block wind and keep you much warmer.
6. Keep yourself dry, both from the weather and perspiration. The smallest amounts of rain, drizzle, snow, sleet or sweat will eventually chill you—especially when you slow down at the end of a busy day. Remember your rain gear is water proof and will not allow perspiration to exit. During rainy weather change your clothing at least once during the day.
7. Athletic shoes and nylon hiking boots do not provide enough insulation, and rubberized boots don't allow for ventilation—therefore you feet get wet from sweat! Wear water-proofed leather hiking boots, and waterproof your leather hiking boots with a top-quality, commercial treatment. Be sure to use only silicon-based products on leathers which require it. Check the care tag that came with the boots.
8. In snow, pull trouser legs over top of boots to keep out snow and use nylon gaiters (leggings), or tie or tape them to make sure of the seal.
9. Wear mittens instead of fingered gloves when you do not need independent use of your fingers. This will allow the fingers to help keep each other warm. Use a pair of wool or acrylic socks to cover hands if mittens get wet.
10. Wear a stocking cap or other warm hat. One that covers the ears and neck area is particularly effective. Remember, most radiant heat loss is through the head. Wearing a warm hat warms the rest of your body, too.
11. Wear a scarf to reduce heat loss around the neck. Use a "ski mask" or scarf over your face for protection from the cold and wind. In an emergency use your neckerchief or bandana to cover your ears.
12. If you need to stand next to the fire to keep warm you are not dressed properly! If the heat can get to your body, so can the cold. Instead of building up the fire, change damp clothes and add layers.
13. In an emergency, paper is a good insulator and can be wrapped around the body (under your clothes) to add insulation.

BEDDING DOWN

1. Natural fiber sleeping bags, including down bags, do not maintain their insulation properties when damp. A 3 to 4 pound synthetic bag will take care of most of your needs even in bitterly cold weather.
2. A mummy style bag is warmer than a rectangular, as there is less space for your body to heat. Also, most mummy bags have a hood to help protect your neck and head. If you only have a rectangular sleeping bag, bring an extra synthetic blanket to pack around your shoulders in the opening to keep air from getting in.
3. NEVER sleep with your head under the covers. You'll get warm for a short time, but doing so will increase the humidity in the bag twenty-fold, reducing the insulation properties of the bag and increasing dampness. If you're cold, lay your clothes on top of your bag for insulation.
4. Remember to air out your sleeping bag and tent, when weather permits. Perspiration and breath condense in the tent at night and the water will reduce insulating properties of your bag. Dry Winter air will quickly work magic on a damp bag.
5. Wear a stocking cap to bed in order to reduce heat loss.
6. A bag liner made from an old wool blanket will greatly enhance the bags warmth.
7. Insulate yourself from the ground as much as possible to avoid cold spots at the shoulders and hips. And use a sleeping pad of closed cell foam instead of an air mattress. Most sleeping bags have more insulation below you than above, but if you can feel cold ground, add bottom insulation. A good rule of thumb is that you want 2 to 3 times the insulation below you as you have over you. And if you sleep on a cot, cold air will be above you and below you!
8. Your ground cloth will keep ground moisture from your bag. Your body will warm up frozen ground to a point where moisture can become important. Space blankets, if used as a ground cloth, will not reflect body heat. Instead it will conduct the cold from the ground to your body!
9. Exercise a little before bedding down to increase body heat—such as a brief walk-around camp. This will help to warm your bag quicker. Be careful not to start perspiring!
10. Remove the clothes you are wearing before bedding down if they are damp with perspiration. Put on dry clothing or pajamas before entering the sleeping bag.
11. The temperature inside your tent will usually only be a few degrees warmer than the temperature outside. To help cancel the effect of Winter winds, pile up snow or leaves to a height sufficient to protect you when lying down.
12. Before you get out of your bag, bring the clothes you plan to wear inside your bag and warm them up a little before dressing.
13. Hang your sleeping bag up or just lay it out, between trips, so the filling will not compress and lose its insulating properties.

ODDS AND ENDS.

1. If at night you get cold, let the adult leadership know so action can be taken before injury happens. It's better to be kidded about forgetting something than risking hypothermia!
2. Organization and proper preparation is very important in cold weather camping. Good meals, proper shelter and comfortable sleeping arrangements make for an enjoyable outing. If you leave any of these out, you'll be miserable.
3. Drink 2 quarts of fluids per day besides what you drink at meals. If you're not urinating at least every half hour or so, and if you're urine isn't clear, you're not drinking enough fluid. And coffee is a poor hydration agent—it actually encourages fluid loss and bowel movements.
4. Learn to recognize and treat cold weather health problems. These include frostbite, hypothermia, dehydration, chilblains, trench foot, snow blindness and carbon monoxide poisoning.
5. Use the buddy system to check each other for cold weather health problems. Notify the adult leadership if symptoms do occur.
6. If you start to feel cold, gather some wood, take a brisk walk or do some other type of work. Working will help warm you.
7. Eating ice or snow WILL reduce your core body temperature—your body has to work extra hard to warm it up once ingested—and it is not pure. Don't eat it. Snow and ice can be used for drinking water—but only after boiling.
8. No open flames (candles, matches, etc.) inside the tents. Wiggling your toes inside your boots will help keep feet warm. If your feet get cold put on a stocking cap.
9. Take dark sunglasses if snow is in the forecast. The glare of the sun off the snow could lead to snow blindness.
10. Keep off ice on streams, lakes and ponds. (It's hard to swim in the Winter.)
11. It takes longer to cook food in cold weather, so plan accordingly. Before going to bed, pour enough water for breakfast into your cook pot. You won't be able to thaw out a frozen water bottle in the morning, so keep water bottles in an insulated location.

12. Keep your matches in a metal match safe. Plastic can freeze and break if dropped. Carry extra matches and fire starters, because the more you need a fire to warm up, the less likely you will be able to start one easily. (Murphy's law, of course.)
13. Gather twice as much fuel as you think you'll need for fires. Carry tinder from home. It may be hard to find in snow or wet conditions. Gather your wood and tinder for the morning fire in the evening so that you will be able to start the fire quickly in the morning.
14. Leave space blankets at home. The metallic properties take over the insulation properties in cold weather and become cold conductors.
15. Flashlight batteries are effected by cold. You can revive a weak battery by warming it up in your clothing.
16. You may want to take a bottle of propane into your tent with you at night. This will keep it warmer and make it easier to light your stove for breakfast.
17. Heaters inside your tent can lead to carbon monoxide poisoning.

Good BSA Cold weather camping references:

- OOPIK manual, No. 34040
- BSA Field manual
- BSA Snow Camping Venture manual

LAYERED CLOTHING SYSTEM

Select the proper type and amount of clothing. Regulate your clothing according to your activity rate. This is the most effective way to ensure comfort. Pay attention to your bodies' signals. Don't wait until you are cold to put on more clothing. Act when you first begin to feel cooler.

Clothing layers:

- Long, thermal underwear, tops and bottoms (Polypropylene is best)
- Polyester, Dacron or wool shirt—not flannel (which is cotton!)
- Wool or wool blend trousers
- Wool sweater or Polarfleece jacket
- Insulated nylon jacket (to block wind)
- Rain gear
- Wind and/or rain pants
- Wicking inner socks: polypropylene or Thor-lo "Cold Weather Inner Sock"
- Insulating socks: wool or man-made Thor-lo
- High quality waterproof boots
- Optional snow gaiters
- Head coverings
- Gloves and mittens

TYPES OF COLD:

Wet cold: 50° F to 14° F

The most dangerous. Wide temperature variations from melting during the day to freezing at night makes proper dressing difficult, and important. Damp conditions from melting snow or rain makes keeping dry difficult.

Dry cold: 14° F to -20° F

Ground is frozen and snow is dry and crystallized. Strong winds cause the most concern with keeping warm. Extra clothing layers and wind-proof outer garments should be added.

Arctic cold: below -20° F

Requires the most insulation and wind-proofing. Many materials change physical properties, becoming brittle. Only for the most experienced campers.

LOSS OF BODY HEAT

Homeostasis:

Homeostasis is the body's process for maintaining 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 heat loss. (55%) A major source of heat loss. Heat is lost directly from exposed skin and the head and neck. 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 heat loss. (15% w/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 loss. Heat is lost from the wind carrying away heat from the surface of the skin. This includes wind-chill effects.
- Evaporation heat loss. (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 heat loss. (2-9%) Heat lost from inhaling cold air and exhaling warm air.

COLD WEATHER FIRST AID

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
- Nausea and loss of appetite
- Dark urine or constipation
- Irritability, fatigue
- Thirst

6 to 10 % deficiency

- Headache, dizziness
- Labored breathing
- Tingling
- Absence of salivation
- Inability to walk
- Cyanosis (bluish or grayish skin color)

11 to 20 % deficiency

- Swollen tongue, inability to swallow
- Dim vision, deafness
- Shriveled, numb skin
- Painful urination
- Delirium, unconsciousness and death

Treatment:

Mild cases - drink liquids, keep warm.

More severe cases require professional medical treatment.

Hypothermia

Lowering of the inner core temperature of the body. Can and usually does happen in outdoor temperatures 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.

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 prewarmed 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)

- 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 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.

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.