

# Winter survival in the backcountry

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# Winter survival in the backcountry

## BE PREPARED

Precaution — along with knowledge of winter hazards and survival skills — is essential for safe winter wilderness travel.

In the backcountry, you are the one responsible for your own safety.

We are offering advice for some emergency situations, but it by no means gives all the information you need to know. Backcountry travellers are advised to learn survival first-aid and CPR (cardio-pulmonary resuscitation) techniques in case of accident or illness. Contact the St. John Ambulance or the Canadian Red Cross for information on CPR courses.

A winter wilderness outing can be an enjoyable adventure. Proper preparation for emergency situations will give you the peace of mind to enjoy a great wilderness experience.

## BASIC SURVIVAL KIT

- Waterproof matches, disposable lighter or flint
- Candle
- Pocket knife
- Aluminum foil-heavy duty 1 m x 1 m (3 ft. x 3 ft.) for cooking, insulation, and making water containers
- Two heavy duty plastic bags for shelter
- Compact folding saw
- A whistle for emergency communication
- Roll of 2 in. waterproof tape for first aid, patching, binding and tying
- Soup that can be cooked in its own foil wrapper
- 10 m (or 30 ft.) of thin nylon cord
- 1 m (or 3 ft.) of electric wire that can be used for tying and making handles for foil cookware
- Map (*not shown*)
- Flashlight or head lamp (*not shown*)

## WINTER PRECAUTIONS

- Check all equipment before departing.
- Advise a responsible person of your destination and of when you will be returning home.
- Allow a margin of safety when calculating time for your trip. The slowest member of the group sets the pace.
- Keep the group together and take frequent head counts.
- Take short rest stops for food, water, and toilet breaks, and for adjusting equipment.
- Be alert for signs of fatigue, frostbite, sunburn, or other changes in the physical condition of group members.
- Watch the weather. Turn back before severe weather conditions develop, or seek shelter if conditions change too fast.
- Carry proper equipment when travelling in avalanche terrain and know how to use it.
- Check the ATES ratings for the area you wish to go and ensure you are adequately prepared for the Terrain Classification selected.



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## THINK... THEN ACT

- In an emergency situation, stop and think.
- Do not panic or become disoriented.
- Conserve your energy.
- If you are lost, do not wander aimlessly.
- If you have a whistle, blow it periodically.  
Three blasts mean help.
- Listen for noise from people who are searching for you.
- Do not wear yourself out by excited yelling.
- Climb a nearby tree or another high point and look for landmarks.
- Listen for highway sounds or other indications of people nearby.
- Stay Dry



Identify your location clearly with large ground markers, such as tree limbs, placed in an arrow fashion. This will allow searchers to follow you and also provide you with a landmark. As you move from this arrow, leave other markers at intervals.

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## SHELTERS

Protect yourself from the elements by preparing shelter well in advance of darkness. Shelter construction takes time, energy, and daylight visibility. Remember, a person who is caught in extreme weather and too exhausted to work efficiently could perish before a shelter can be constructed.

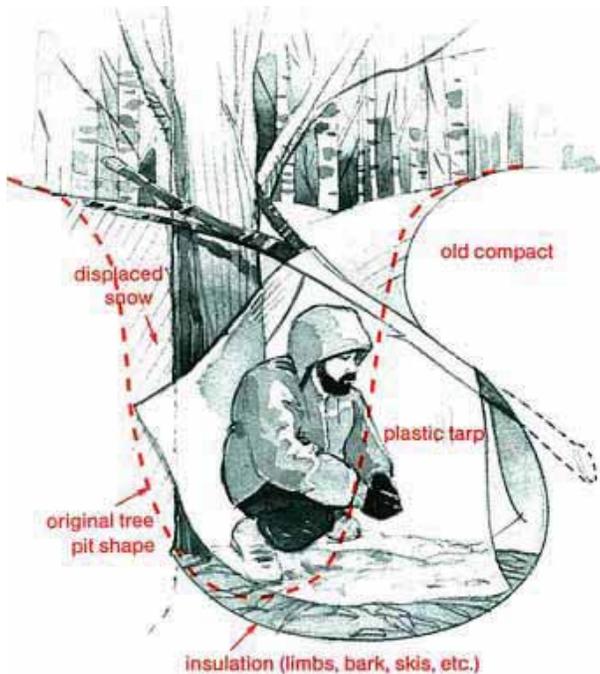
Work slowly in order to avoid sweating. Wet under-clothes should be changed or removed and used as outerwear once they are wet. Never build at the base of slopes where snow may drift or avalanche.

*This simple,  
portable shelter could  
save your life.*

### PORTABLE BODY SHELTER

A plastic tube (available in many sports retail outlets) or two large garbage bags can shelter your body from cold, wind, and rain.

Such emergency gear is lightweight, inexpensive, and compact when folded.



### TREELINE SHELTER

Large trees may have snow-free pockets at their bases that can be dug out further and used as shelters. Often, an area can be hollowed out under a log to serve as a makeshift shelter.

Keep the living area as small as possible. Use slabs of bark, tree boughs, or a tarp to enclose the shelter space. Boughs can be used to insulate the ground area. Holes can be plugged with moss, bark and snow.

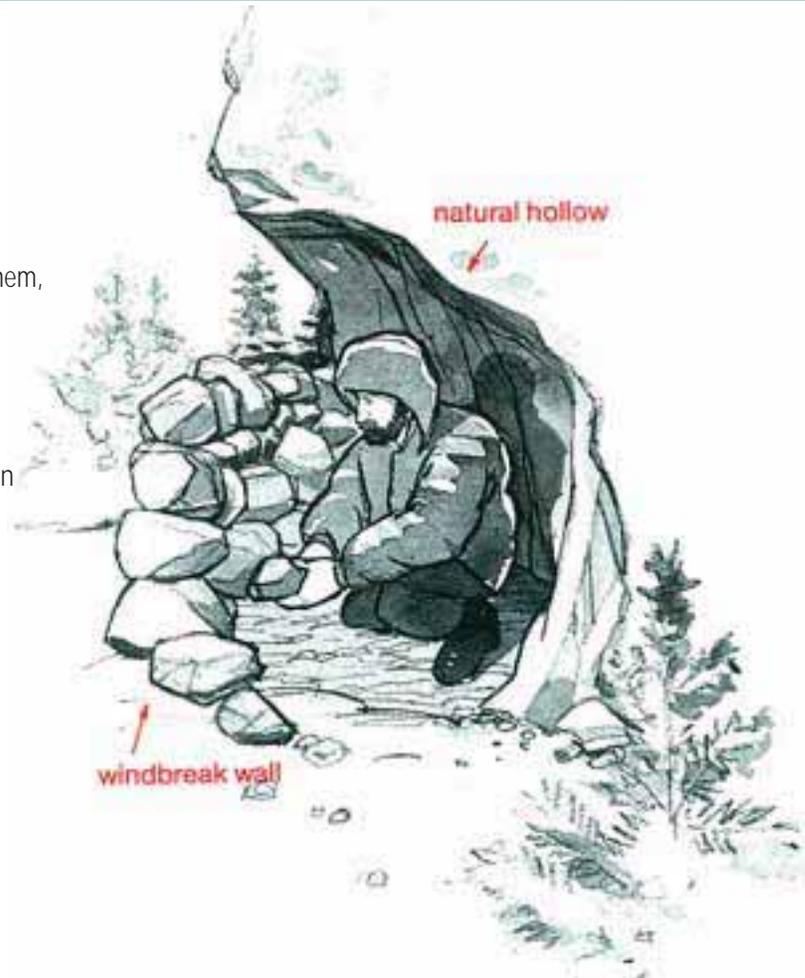
Tree shelters are by far the quickest and least energy-consuming shelters to construct.

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## **ROCK SHELTER**

Large boulders can often be used as shelters. Some boulders have natural caves underneath them, or a space can be dug out and wind proofed by building walls with smaller rocks or snow. Fill gaps with packed snow.

A rock shelter could mean the difference between life and death in a winter emergency.



## **SNOW SHELTER**

Snow contains air spaces between its ice crystals. These dead-air spaces make snow a good insulator. Snow put to constructive use will provide shelter, protection and insulation, all of which are necessary for survival.

To avoid heat loss, always insulate yourself from direct contact with the snow. Tree boughs, packs, or other equipment can be used to sit or lie on.

## **SNOW TRENCH**

Dig a body-size trench in the snow. Using snow, raise walls on each side of the trench to protect you from the wind. Make a roof using snow blocks, tree boughs, packs or a tarp.

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## **SNOW CAVE**

Snow caves usually take hours to construct, so start early. Choose an area with a 20 to 30 degree slope for ease of digging. Use your hands or a stick to dig out a body-size depression. Look for a drift or packed base that is at least six feet deep. Caves dug into snow banks are also satisfactory.

When occupying any shelter, brush off all particles of snow from your clothing before entering the shelter. The warm inside atmosphere will melt the snow and wet clothing will result. Try to keep the clothing near your skin as dry as possible to retain body heat.

## **POWDER SNOW SHELTER**

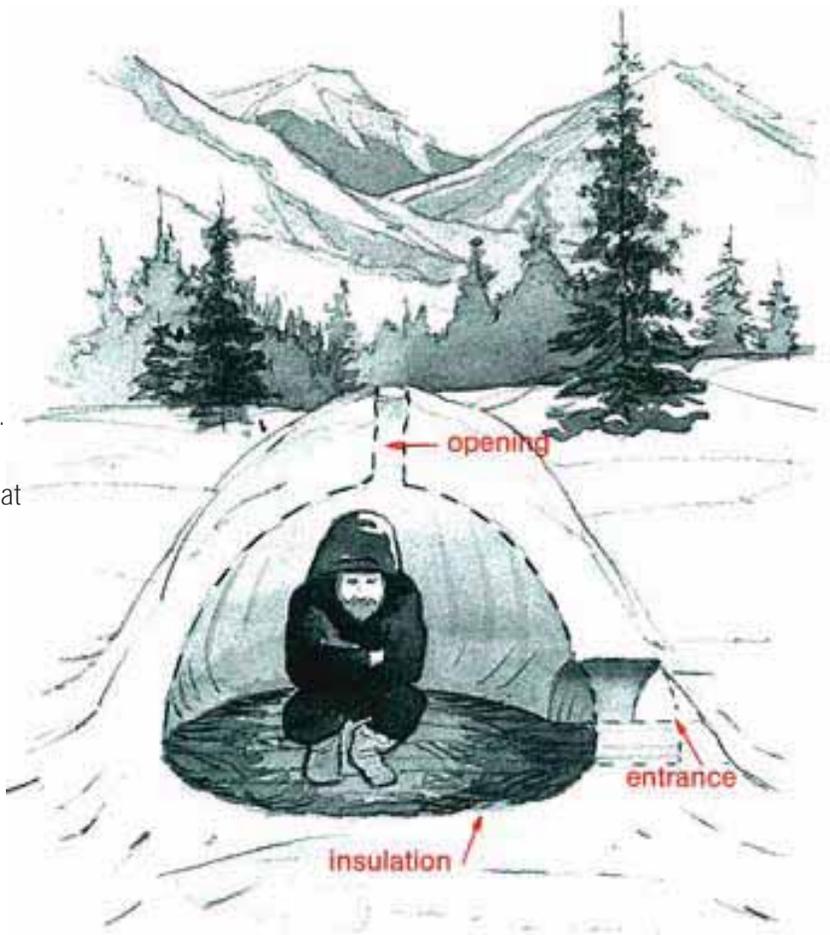
Special construction techniques and about three hours of work time are required to build a snow shelter when only 15 to 20 cm (6 to 8in.) of snow are on the ground.

First, select two sticks about 1.8 m (6 ft.) long. Drive one of the sticks vertically into the ground or prop it up with rocks. Use the other stick to draw a 3.6 m (12 ft.) diameter circle around the vertical stake, and then place this stick on the ground so that it touches the centre stake like a spoke of a wheel.

Next, shovel the powder snow into the circle so that the snow is highest at the centre stake. Pack the snow often. Continue this building process until the snow mound is packed to the level of the centre stake.

Allow the snow mound to set for about one hour, and then tunnel into the mound along the horizontal stick to where it meets the vertical stake.

Enlarge the tunnel to make a small room with walls about .6 m (2 ft.) thick. Make certain to dig down to the ground level and then insulate the ground area with tree bough. Remove the vertical stake by pulling it from the bottom.



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## **FROSTBITE**

To reduce the possibility of frostbite, avoid any clothing that might restrict blood circulation.

Don't wear tight gloves or mittens, too many socks that create tight fitting boots or pack straps adjusted too tightly.

Swelling is a common result of frostbite and all tight-fitting garments or straps should be removed, even if they must be cut off.

The first signs of frostbite are whiteness of the skin and lack of feeling in the affected area. In cold weather, members of the group should check each other for signs of frostbite.

In early stages of frostbite, active movement may increase circulation and return blood flow to the affected area. Moving around, stamping the feet and swinging the arms can help to regain lost circulation.

If serious frostbite has occurred (tissue is solid) do not thaw the injured area unless the person can get to a hospital without risk of the tissue re-freezing. You can ski or walk out with frozen feet or hands if necessary.

## ***Help for the Victim of Frostbite***

Warm the victim's frozen area with your body. Put your hand on the area or place the frozen area under your clothing or armpit. Make certain there is no pressure on the affected area.

- Never rub the frostbitten area with snow and do not massage it. These actions can destroy skin cells and cause extreme damage.
- Do not apply ointments.
- Do not warm the area above body temperature.
- Cover the affected area with a dry, loose dressing or similar material.
- Ask the victim to move the frostbitten part of his body to increase circulation.
- Give the victim hot, sugar-sweetened liquids to drink. This will help increase circulation to the body extremities.
- If possible, get the victim back to camp.
- Do not thaw an extremity if there is a risk of re-freezing

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## **HYPOTHERMIA**

Hypothermia is abnormally low body temperature and it occurs when the body has been chilled so that it loses heat faster than it can produce it. Hypothermia can occur in accidents where the victim is rendered motionless: falling into water, falling into a crevasse, being buried by an avalanche, excessive consumption of alcoholic beverages or taking drugs that cause unconsciousness. It can also affect a person who has had no accident, but has been outdoors in cold weather for a lengthy period.

Early symptoms of hypothermia are often noticed by others first and the victim last. Look for shivering, difficulty with speaking, and sluggish movement. If they have not lost the shivering reflex – try to remove them from the cold if possible.

### ***Treating the Conscious Hypothermia Victim (when mild/moderate and alert/conscious)***

- Keep the victim absolutely still. Do not allow the person to walk. Even a minor movement such as stretching a bent knee can lower the body temperature by as much as 3°C.
- Remove all wet clothes and replace them with dry garments. When critical, cut off clothing to avoid unnecessary movement. If aluminum foil or space blanket is available, place it under the victim.
- Give the victim hot unsweetened liquids and/or warm food. Never give alcoholic drinks, and never rub or bind extremities.
- Transfer body heat to the victim by holding the person in your arms or by lying next to him. Lying with the victim inside a sleeping bag will also help to transfer body heat.
- Build a heating fire.

### ***Treating the Unconscious Hypothermia Victim***

- If cardiac arrest occurs, administer cardiopulmonary resuscitation if you know the technique.
- Remove all tight-fitting garments and loosen boots.
- Apply hot packs and, if possible, stabilize the victim in a shelter before transporting him. During transportation, monitor heart activity by taking pulse readings and handle patient very gently. Do not give up, even if the victim's heartbeat and breathing seem to stop. Continue the life-saving routine until professional medical help arrives to relieve you.
- The use of hot baths as a treatment runs the risk of a rewarming collapse, and should be used only by trained staff during hospitalization and intensive care.
- Use mouth-to-mouth resuscitation; the warm air from the rescuer will help rewarm the victim.

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## **Mouth-To-Mouth Resuscitation**

- If the victim is unconscious, clear all obstructions from the nose and mouth.
- Use the "head tilt/chin lift" method (see below). If the person is buried in avalanche, this procedure should be started before uncovering the remainder of the body.
- If pulse is absent, begin cardio-pulmonary resuscitation if you know the technique. Place a solid object, such as skis, directly beneath the victim. This will provide support when applying chest pressure.
- In an emergency situation the sooner you start treatment, the greater the chance for survival. If possible, send someone for medical aid while you treat the victim.



## **Head Tilt / Chin Lift Method**

Open the airway. Place one hand on the victim's forehead and keep the head and neck stationary. Lift the chin upward and forward with the other hand.

Keep the airway open and check for signs of breathing. Listen for sounds of breathing, watch for chest movement and feel for exhaled breath. If the victim is not breathing begin mouth-to-mouth rescue breathing, Turn the hand resting on the victim's forehead and pinch the nostrils closed.

Open your mouth and take a deep breath. Seal your mouth over the victim's mouth. Blow two short breaths into the victim's lungs (1 to 1.5 seconds each). Remove your mouth, allowing time for the victim to exhale. Repeat the cycle until the victim is breathing or until help arrives. (For infants, place your mouth over both the mouth and the nostrils. Use smaller puffs of air.) It is advisable to carry a mouth-to-mouth ventilation mask and to know the proper methods of its use.

Check for bleeding. Place a clean piece of cloth over the wound and apply pressure. If possible, elevate the wound above heart level. Keep the victim warm to combat shock. Never give alcohol to the victim.

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## **AVALANCHES**

Learn to recognize and when possible, avoid avalanche slopes. Carry and use avalanche beacons. Also, carry probes and shovels when traveling in avalanche-prone areas.

Travel quickly one at a time across suspect slopes. Choose your escape route. Others should watch the person in danger. Remove ski straps and pole straps, loosen all equipment, put on mitts and cap, and fasten clothing before crossing the slope.

If caught in an avalanche, discard all equipment. Try to stay on top and work your way to the side of the avalanche by making swimming motions. Do not cry out or open your mouth while the avalanche is in motion. As you are coming to a stop, put your hands in front of you and try to make an air space. If you are near the surface as the slide stops, thrust a hand or leg upwards so that others can locate you faster.

### ***Locating Avalanche Victims***

Visually follow the victim, noting the spot at which you lost sight of the person. Before beginning the search survey the area for other hazards and appoint a leader. Physically mark the spot where you last saw the victim. Search along the flowline directly below the last point at which the person was seen. Begin transceivers search immediately. Mark the sites of all clues and then probe the most likely spots. Major deposits below last seen point, in-line with clues.

**You are the victim's best chance for survival.** An avalanche victim has only 50 per cent chance of surviving for one half hour.

Go for help only if it is a few minutes away. You must consider not only the time needed to reach assistance, but also the time required to return to the avalanche area. If you must go for help, mark the route so that a rescue party can follow it back. Always return with the rescue party.

For up-to-date avalanche conditions go to [www.avalanche.ca](http://www.avalanche.ca) and look for links to "Avalanche Bulletins".