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Winter Survival Skills

by Arthur Montague

Last January a friend and I decided to spend a weekend dog sledding in a wilderness area normally untraveled during winter. In early afternoon of the first day we stopped for a tea break. The dogs may have smelled a rabbit or they may just have been bored with our company. Whatever the reason, both teams upped and took off into the bush, taking the sleds and most of our supplies with them.

We were left with our snowshoes, two tea mugs, and the contents of our pockets. A quick inventory revealed a half-dozen chocolate bars, two sturdy knives, and a lighter, the last a leftover benefit of my former smoking habit.

The dogs had been traveling fast over crusted snow. We estimated we were as much as twelve miles from safety. Add to that the fact that the wind was kicking up, the temperature was dropping, and the sky was clouding nastily. We decided our best prospect was a night in the bush and a long hike back to our truck the next day. By applying some winter survival basics, we would be safer where we were than walking out in the dark.

Caution and Calm

Even veteran winter wilderness adventurers can get caught by weather or an equipment failure. Beyond inconvenience and upset plans, the experience has the potential to be life threatening. When hiking immediately out of a situation is not an option, survival can depend as much on the way in which the terrain is utilized as on the materials a traveler has available.

The first thing a traveler should do is assess the immediate environment for its utility. If trees are unavailable for a fire, wild grasses usually are. If natural wind breaks aren't available, snow can be piled to form them.

Similarly, shelters abound, but they must be assessed with a thoughtful eye.

A cleared area in mountainous country may look like an excellent location for a shelter but the savvy traveler can identify it as an avalanche chute. Especially if the snow is deep, check for a detritus buildup at the bottom of the clearing and broken tree stumps along the down slope. While detritus alone may only be the result of spring runoffs, the combination usually indicates a chute. It would be much better to camp in the trees at the side of the cleared area and let an avalanche thunder past your door rather than over your head. In the same manner, the foot of a cliff may look inviting but the overhang may be unstable. Better to stay further in.

Don't forget that constructing a shelter against a metal surface is a no-no. The side of a vehicle may appeal as a ready made protective wall but, unfortunately, metal surfaces conduct heat — the last thing a person wants to lose in sub-zero weather.

In open country, large snowdrifts and roadside ditches can provide excellent locations for dug-in shelters and trenches. In bush country, try not to stray from the shelter site without a probe — a ski pole, or long branch, especially in former burn areas where deadfalls and steep drops may abound just under the snow.

Priorities Must Prevail

Shelter, water, and warmth are vital — in that order. Darkness falls fast during northern winter months, but once you find an appropriate location, you can construct a shelter in less than an hour. Gathering enough fuel usually takes longer than building a shelter. The more lead time before sunset, the more comfortable — or less uncomfortable — the night will be.

Snow shelters can be elaborate, with shelves for sleeping and sitting, entranceways for removal of wet boots, even vent holes to circulate air. Constructing them can take a lot of time, some experience, and special tools such as a snow saw to cut blocks. But a basic one-night snow shelter can be as simple as a trench stomped out in the snow in fifteen minutes.

Select a location against a hillside if possible; hills often afford some protection from wind. In any case, additional wind protections can be constructed. Avoid lowlands when selecting a site because cold damp air descends, and penetrating damp cold can eat into your bones. You can level your chosen spot by stomping down the snow and removing the excess.

Make a trench at a right angle to the wind and, ominous though it sounds, about coffin size: it should be three feet deep, shoulder width, and a few inches longer than its occupant. Excess snow should be used to build a wind break along the windward side of the trench. If time permits, build a second, parallel trench on the windward side to prevent drifting during the night.

If the snow is not deep enough to allow for a trench, remember that snow is movable. Dig down to bare ground and scoop up nearby snow to pile walls around the trench. Now, add some comforts. If extra clothing is available (though that's hardly ever the case), use it for flooring. Tree branches, especially

from conifers, are a preferred alternative; they provide useful insulation against the bare ground. Extra clothing can then remain dry or be folded and pummeled into a cozy pillow.

The smaller the entrance, the warmer the shelter will be inside. Rocks and trees can be used as wind breaks, and burrowing beneath low branches can provide a well-supported instant roof. Shake any excess snow load from overhanging branches or Murphy's law is liable to drop it on you just as you are falling asleep. When snow is deep enough and has a solid crust, starting a snow hole with a narrow opening and hollowing out the larger sleeping area is possible. When enough space and height are available, a snow shelf for sleeping can be constructed. The compactness of the shelf space will retain more warmth.

If on a hill, put the opening at the bottom end and dig upward. Not only is it easier to push the snow downhill, a downhill opening will keep out some of the cold. Skis, snowshoes, or long branches can be used as roof supports on trenches or open snow holes. Crossed over the top they can be covered with a layer of small branches that in turn can be covered with loose snow. Skis, ski poles, or long branches can also support an open air vent through the roof.

When you're in for the night, branches or a jacket can be fashioned to provide a door. If you plan to close up your doorway, however, you'll need an air hole. Place your skis or poles vertically through the roof, and turn them in the process to clear the vent. If you can't or won't dig yourself into a spot, then you can use your skis and poles to support a simple lean-to structure, possibly against a rock face or, even better, a deadfall. Brush and branches over the supports, covered with as much loose snow as it will hold, provide an insulated shelter.

Snow is so much better an insulator than the average tent that some winter adventurers actually prefer to use the tent for flooring. Others erect the tent and then pile the snow around and over it. Of course, this works only as long as the snow is light and its weight does not collapse the tent.

Fire and Water

Shelter problems solved, next come considerations of heat loss and dehydration. Constructing the shelter and gathering firewood are warming exercises that can raise a sweat in minus ten degree weather. Despite this, body heat and moisture loss, as well as hypothermia, can quickly occur. Drinking water can solve one problem and a fire the other. With luck, a stream, river, or lake may be nearby. If the quality of open water is problematic, as it can be in areas of agriculture, mining, or pulp manufacturing activity, melting snow for water is a somewhat better option. Add to the safety factor the fact that the glow of the fire can have a comforting effect while the snow melts.

Like the shelter, the fire pit is another hole in the snow with a wind break piled around it. The pit should be large enough to accommodate the fire, a stock of fuel, and seating the site's occupant(s). Snow shelves can be shaped for seating, making sure the walls are higher than the occupant's head. When the fire is well engaged, snow can be melted for drinking water and racks for drying clothes can be fashioned with branches.

Before starting the fire, make sure you have all the fixings at hand. You'll need a layer of branches on the bottom of the fire pit to form a base for the fire. You'll also need dry leaves, twigs, and branches broken to about eighteen inches in length. Dry branches are usually found at the tree bottom, protected by the canopy from snow and damp. Twisted pieces of grass or weeds, dry needles, even the inside bark of dead trees also will work.

The rule for fuel gathering is to estimate how much will be required, gather it, and then gather more. Trying to gather fuel in pitch darkness is no treat, especially during nasty weather.

Space-age instant fire starters can be purchased from most sporting goods shops but, of course, the shops don't deliver. A few matches or a lighter are most often available. If a vehicle is nearby, and it will idle — and the cigarette lighter works — getting a good fire going becomes easy. Otherwise, gas can be soaked from the carburetor unless the tank is empty. You can sometimes get light, dry tinder to start smoldering by momentarily shorting the battery to create a spark.

The weather may be horribly cold but be patient. Starting the fire small, teepee style, and feeding it slowly is the best way to be successful. Once it's going, keep it going.

Still, shelter and heat are not enough. In extreme cold weather conditions, dehydration is a major concern. Rick Curtis of the Princeton University Outdoor Action Program suggests that people need to take in a gallon of water daily — even more if solid food is unavailable. If the water can be heated before drinking, the extra heat calories are a bonus.

Snow can be melted in any container. Unpalatable and tedious as it may seem, if no container is available, snow can be wrapped in a piece of clothing and melted until the cloth is saturated, then sucked to obtain the moisture. With no open water and no fire, water intake becomes even more important, even if it must be obtained by melting small amounts of snow in one's mouth (be mindful that too much can cause stomach cramps). Avoid coffee or alcohol, even if they are available. Their short term warmth will quickly be outweighed by the dehydration they cause.

Solid food in the form of edible plants, small animals, fish, or birds may seem important but for novices the creatures are elusive, and chowing down on the wrong plant, more likely to occur than not, can be toxic. Water alone can sustain a person for several days, hungry but healthy. Nor has energy been wasted on fruitless foraging.

Lack of a fire may mean discomfort but it does not necessarily result in hypothermia or frostbite as long as shelter, water, and warmth remain priorities. Wet gloves can be placed inside one's jacket. Body heat will dry them and keep them from freezing. The same can be done with wet socks provided one's feet are otherwise protected. Sleep will probably be fitful but periods of wakefulness can be used to wiggle and massage cold extremities to keep circulation going and prevent frostbite.

Once inside your snow-insulated shelter just hunker down, let the night pass, let the storm blow itself out. A bear in its winter den may be more comfortable, but not by much. Last January my friend and I did just that. Beginning at first light, we snowshoed back to our truck. It was easy going over freshly fallen snow.

As for the dogs, they were there waiting for us, none the worse for whatever they had been doing all night — much like us!

Emergency Snowshoeing

Walking out of a dangerous situation can be very tempting. However, plowing through knee-deep snow — whether light and dry, heavy and wet, or thinly crusted — can rapidly sap energy, worsening an already bad, perhaps dangerous, situation. Emergency snowshoes, fashioned in a few minutes, can make the trek much less strenuous, much more feasible, and perhaps even comfortable.

Snowshoes are designed to float like rafts on all types of snow. Over-the-counter snowshoes are selected on the basis of anticipated terrain, weight of the wearer (including any packs), type of snow, and purpose. For example, snowshoes for mountain hiking or racing are smaller than those for use on flat, open terrain. Those used over powder snow are larger than those for wet snow. The only rule for size that needs to apply, if one is stranded in the countryside, is "the heavier the load and lighter the snow, the larger the snowshoes."

Constructing a pair of emergency snowshoes is easier than trying to walk in them the first time. For their base, two bushy tree branches about thirty-six inches long work well for most adults in most terrain. If available, fir is the best because its thick small branches and dense needles provide more buoyancy. Spruce, pine, or willow also work well.

By whatever means, tie the branches to your boots, positioning the boots toward the widespread front end of the branches. If you are abandoning a vehicle and have no other binding material at hand, pull off some of the wiring. Otherwise, thin, supple branches will work, although they may need replacement before journey's end. Ideally the binding should be threaded through a boot lace or fastener for added security. The main point is to ensure the snowshoes are attached to the boots in a manner that enables movement without the shoes slipping off.

Depending on the terrain, at least one long sturdy snow pole (such as a long branch) is very useful for maintaining balance and probing for obstacles. If the area is hilly, two poles, one long and the other short, are better. In addition to improving balance, they can assist traction while you are climbing or descending.

Since many of the techniques are the same, experienced cross country skiers will have little difficulty adjusting to snowshoeing. Yet snowshoes are cumbersome at first, certainly compared to skis, because of their width. Emergency snowshoes are even more so, because they tend to be heavier than commercial snowshoes and they may not be of uniform size. They also lack edges, so they can make it trickier to achieve traction.

Snowshoeing on level ground is like walking in the park, except one's feet have become three-feet long and, sometimes, nearly two feet wide. To be an effective snow-shoer, make sure each step clears the snow. Shuffle stepping, even in light snow, may break down the decking branches. Keep to clear paths when possible to avoid catching on brush; it can sometimes rip homemade shoes apart (the edge or frame on commercial snowshoes enables slipping past brush).

Negotiate any hills you encounter by stepping sideways. This technique provides more traction and enables more use of the poles. Turning around also is best done slowly; jump turns in floppy snowshoes often result in falling over.

Wilderness Cuisine

Particularly for cross country skiers and snowshoers, compact, high energy food supplies are important. Moreover, cold weather diet needs are different, requiring more calorie intake to combat heat loss.

Increased interest in outdoor wilderness activity has resulted in a surging diversity of available trail foods and high energy bars. Yet many cold climate wilderness adventurers still stick to the cheaper, tried-and-true chocolate and granola bars.

The theory that "if it isn't broken, why fix it?" can go back in history even further to pemmican and tea. For knowledgeable travelers, natural foods are always available along the trail, even in winter. Tea, for example, can be brewed from pine needles. For those lacking familiarity with the vegetation, though, it's better not to take a chance.

Pemmican, on the other hand, is easy, if time-consuming, to make ahead of time. And if you make a big batch in one session, it can last for years in a cool, dry cupboard or even a knapsack stored in the back corner of the basement.

Everyone who makes pemmican has a favorite recipe, but for cold weather purposes, melted suet makes the best binder. The other ingredients — essentially powdered meat, dried berries, and nuts — are combined and enough melted suet is added to hold the mixture together. It can be stored in chunks or cut to candy bar size.

Some recipes favor the addition of raisins, dates, or other fruits. Non-meat varieties using honey and peanut butter as binders have also become popular, though suet does suit cold weather.

My recipe is basic: three parts meat (preferably venison or moose); up to two parts suet; one part dried blueberries or cranberries; and one part crushed, unroasted peanuts and whatever else may be in the cupboard, such as sunflower seeds.

A good-sized chunk of pemmican, washed down with hot tea, is a complete meal, but for people

with sensitive palates and a few more dollars, self-heating meals are available in the marketplace. These include everything from three-cheese lasagna to green pepper steak. Also available on retail shelves are foil pouch soups and casseroles — even spaghetti marinara with mushrooms, shrimp Newburg, and sweet peach and pecan chicken. Many of these creations result from NASA-sponsored research into the care and feeding of astronauts and, before that, the refinement of TV dinners.

For a short trip the weight and bulk of two or three self-heating meals, on average about a pound and a half each, may not be consequential. However, in the interests of "no-trace" wilderness housekeeping, the packaging has to be carried home.

Many high calorie food bars also are available, notably a 3,600 calorie bar that incorporates nine three-ounce servings, produced by a company which has provided the food for Antarctic and Mt. Everest expeditions. Because protein content is relatively low, and starch, sugar, and vegetable content high, these bars have the advantage of less need for water to digest them, the opposite effect of pemmican.

Finally, water purification tablets should be as standard in the backpack as waterproof matches. For safety's sake, take as a given that water is contaminated. The tablets will keep the bugs at bay. Lacking tablets, boil the water when possible.

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