

## COLD WEATHER COMFORT

Spend the winter working warm

By Tom Dunlap

One of the reasons that people enjoy arboriculture is that we get to work outside all the time. On most days we are the envy of the office-bound world. On other days though many treeworkers would rather be inside chasing paperwork instead of deadwood.

When the weather starts to cool off in September I start to look forward to the seasonal changes that I know are coming. Among the changes I wait for are the glorious colors that were masked by the green in the leaves, no bugs, the chipper truck not filling up so quickly because we aren't hauling leaves, and not having sweat dripping into my eyes. At the same time the trees are changing their wardrobe I change mine. The trees change from green to fall colors and then bare limbs. In the fall, my wardrobe changes from T-shirts to long sleeved turtle necks and fleece sweaters.

Since the early eighties our trade has gone out to other disciplines within the vertical world for tools and techniques. Gone are natural fiber ropes and rigging in natural crotches. Now we have ropes of many colors, strengths, and specific purposes. Look inside arborist's toolboxes these days and there will be carabiners, slings, and lowering devices that mountaineers or high angle rescue crews would use.

Arborists have become very adept at borrowing and adapting the tools for our use. Now it is time to adapt and borrow the clothing used to stay comfortable outside from the mountaineers. The advances in fiber design are not limited to ropes and slings. The synthetic fibers used to make clothing can keep treeworkers warm, dry, and productive better than any of the natural fibers worn during the summer. We demand high performance and durability from our tools and machines. Now we can get that same high performance from our clothing.

The measure of "cold" relates mostly to your personal comfort zone and what is usual for your town. The winters that I work in here in Minneapolis are lots different from the winters that my tree climbing friends have down in Austin, Texas. In Australia there is a draft standard for tree climbing in adverse weather. When the air temperature or wind chill is below 41 degrees F, they advise taking extra safety precautions. The wind chill takes into account the air temperature and wind and what that would feel on like on bare skin. Zero degrees is zero degrees, but if you have a good attitude and the right clothing you will be on your way to being comfortable.

There are several ways that we lose heat. When our muscles work we produce heat given off by radiation. Wearing a hat conserves this excess heat most easily. Almost half of our heat is lost from an uncovered head. Convection comes into play when the wind blows the heat away. When climbing in leafless trees it is hard to stay out of the wind. Wearing windproof clothing will help here. Grabbing onto aluminum chainsaws and frozen tree limbs will conduct heat out of our hands quickly. By wearing too many clothes and breaking a sweat we can get chilled by evaporation. The heat of our body is used to keep the sweat vaporized and this is also a major heat loss. When we inhale cool, dry, winter air to our warm, wet lungs, a little moisture is exhaled with every breath. When I go winter camping I know that if the night is going to be below zero, I will respire over a pint of water while sleeping.

During the winter workday you can count on needing as much or more water than you needed during the summer.

The two keys to staying comfortable in the summer are staying dry and venting excess heat. Here is where we can take some lessons from the mountaineering crowd. Most people have heard the advice over the years to dress in layers.

What is more important is to use the correct materials in the layers of clothing. Do you know what the saying "Cotton Kills" means? Cotton is a great, inexpensive material for clothing but when it gets wet, the water saturates the fibers and in order for your body to stay warm, you have to pump many calories of heat into the water to get it to vaporize. This leads to cooling, and in extreme cases, death. The synthetic fibers are hydrophobic.

Water does not "stick" to them. The water droplets will hang on the fibers like dew on a spider's web. Many fewer calories are needed to vaporize that water and push it into the outer layers of clothing. Wool is a good choice for

clothing except that some people get itchy from coarse wool. Silk long underwear is not as durable as the synthetic fibers.

Against the skin wear a set of underwear blended from polypropylene, polyester, or acrylic. These fibers will move the sweat away from your skin into the insulation layer. Next, the insulation layer should be durable, lightweight, and breathable. These days you can't go into a clothing store without seeing racks of fleece clothes. Wool performs well in this layer, but fleece works better. A wet layer of wool will be heavy and takes a long time to dry on your body. I have worn wet fleece clothes and as long as I stay moving, I can be warm. Besides the performance of fleece, most of the clothes look good. There are fleeces made now that are wind and water-resistant too. The outer layer of clothing is for protection. Keeping the wind from blowing heat off our body as well as keeping us dry inside and out is what we can expect a good jacket to do. My Dad was a letter carrier and he used to say that you are going to get wet from the inside or the outside. Many years ago that was true. Now there are many waterproof-breathable fabrics available.

Those two factors are important, but I have found that wearing jackets that have vents built into the armpits or between the shoulders is more beneficial. Being able to vent the excess heat that we can generate footlocking up into the tree is going to pay off by not having our insulating layer wet. Then, once the climber is in the tree doing less strenuous work, it is time to close down the vents and contain our heat.

After spending time working and playing in Minnesota's winters I have found a few useful strategies for being comfortable outside in any weather. Starting at the top, I carry several different hats. All the headgear is synthetic but the hats provide varying amounts of insulation. A lot of times using just an earwarmer under my helmet is all that is needed. When the conditions are a little more severe I wear a balaclava (not the pastry). These hats come down over your neck and have a cutout for your face that can be drawn up so that only your eyes are exposed or tucked under your chin to open your face. Neck gaiters add a little insulation and are much safer than having a long scarf trailing around. Turtle neck shirts that have zippers down the front to allow excess heat to vent to the air, keeping your clothes dry. A good source of tough clothing is to look for snowboarding gear. The outer shells are generally cut a little fuller to allow for more insulation and easy arm and leg movements. The bibs that I use have heavy nylon knees and seat to reduce wear and tear. I like the bibs for climbing because I can tuck my jackets into the bibs, put on my saddle, and my shirts don't come untucked while climbing.

Keeping hands and feet warm is the biggest challenge in the wintertime. If you start to get cold hands and feet, put on a hat or hood, or change to a heavier one.

Since we lose so much heat out of our head, this is an easy way to reallocate the extra heat. There are shirts made that have longer sleeves that cover the palms. The shirts will have a cutout for the thumb so that the sleeve stays in place. To keep your hands warm try wearing a light pair of synthetic liner gloves so that you never have bare skin exposed. If you work with two pairs of gloves and keep the extras stuffed inside your shirt you can change gloves and dry out the wet ones inside your tummy oven. A tip that I picked up from some Arctic explorers is to keep your knees warm so that you keep your feet warm. When the warm blood is pumped to the feet it comes out of the muscular thighs and passes through the bony knees. There is no insulation in the bony knees so insulating the knees helps to keep your feet warm. Wearing kneepads or doubled leg warmers is beneficial. The hard shell pads from inline skating or volleyball pads have been used.

When you go to Hawaii you are given a lei. When you come to Minnesota in the winter, you are given pac boots. These boots have rubber lowers and leather uppers. The liners are made of thick wool or synthetic felt. One way of keeping your feet warm that may sound funny is to wear vapor barrier liner (VBL) on your feet. What these do is keep the sweat from your feet from saturating your insulating socks and boots liners. After putting on a pair of light synthetic socks, you slip on the VBLs and then your heavy socks. At the end of the day you will not pour out a puddle of sweat from the VBLs. When the air around your feet is saturated, the sweat glands stop working. There are specially made coated nylon socks. Most of the time I go low tech and use old bread bags. My suggestion is to try this out on separate feet so that you have a comparison. In the morning, put the VBL on one foot and the same socks on the other without the VBL. Go to work and forget the VBL. At lunch you should be able to tell a difference. If you are going to be inactive for a long time, it would be useful to have a spare pair of liner socks to change.

When ice storms coat the trees with a slippery glaze it is time to go ice climbing? If the trees are going to be removed, I put on my plastic shell boots and crampons. Crampons are made for walking on steep hard snow or ice

and for climbing vertical ice. The bottom points dig in on horizontal limbs and the front points can be used to climb the trunk that climbing gaffs would not work on. Using crampons takes some skill. Like all new climbing techniques this should be learned "Low and Slow". The most comfortable foot position for climbing gaffs is with the toes slightly down. With crampons you must drop your heel or the front points will shear out of the ice. Remember that there are about twelve sharp points down there not just one like on the gaffs.

Keeping your clothes dry from sweat is important but we must remember where that moisture comes from. Drink plenty of liquids in the winter. The more yellow your urine is, the more liquids you need to drink. Avoid caffeine as much as possible.

As your jackets and shirts need replacing, consider buying synthetic materials. The clothes function so much better and you will be much more comfortable. At the end of the day you will go home with a warm body core instead of being chilled to the bones. Incorporating mountaineering clothes into your tool kit will show you that cold weather comfort is not an oxymoron.

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