CHAPTER 2

FIGHTING OLD MAN WINTER (combating the cold)

Old man winter is a tricky fellow. He'll cheat you of your comfort, steal your warmth and sneak into any area left unprotected. With some knowledge of his tactics and our weaknesses, we can develop a battle plan to neutralize his most chilling assaults. With the proper preparation we can enjoy, rather than endure, most winter outdoor conditions.

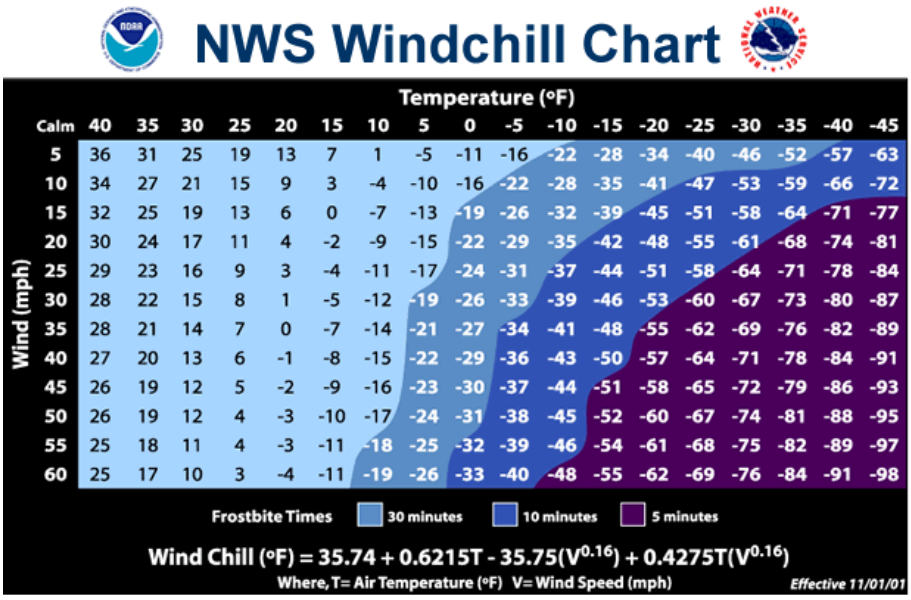
Human beings, like all mammals, are **warm blooded** (homeothermic), which means we have a fairly high and constant body temperature that is relatively independent of our surroundings. If not around an outside heat source, heat must be produced internally; our "fuel" is food. When unable to maintain a constant body temperature of 98.6 degrees Fahrenheit, we risk **hypothermia**. As our body temperatures drop below 97 degrees, shivering and a loss of coordination begins. If cooling continues, at around 88 degrees the shivering slows or stops, we become disoriented and rational thinking is all but impossible. Without immediate expert care, chances of surviving are low. If nothing is done to halt the decline in our body temperature, death

HYPOTHERMIA CHART			
	MILD	**MODERATE**	**SEVERE**
SYMPTOMS	• Shivering • Complaints of cold • Loss of coordination • Psychological withdrawal and apathy	• Listlessness, mental confusion, refusal to recognize problem • Uncontrollable shivering • Slurred speech • Stumbling	• Unresponsiveness • Decreased pulse and respiration • Cessation of shivering • Physical collapse
FIRST AID	• End exposure – get victim out of cold and wet • Replace wet clothing with dry, or add insulation • Place victim in warm environment • Offer warm liquids or food only if victim is fully conscious	• End exposure – cover victim rather than walking him to shelter • Treat victim gently – avoid jostling or movement • Do not allow victim to exercise or move • Check victim for other injury, including frostbite	• Treatment should be attempted only if victim cannot be evacuated to a hospital promptly for professional care • In such a case: Deliver warmth to head, neck, armpit and groin areas by application of warm water bottles, warmed blankets, or another warm body

usually occurs at around 77 degrees. It doesn't need to be below freezing for hypothermia to occur. Temperatures below 60 degrees with a slight breeze can place a wet person in danger of hypothermia.

Frostbite, the freezing or the effects of partial freezing of parts of the body, is a sneaky attacker. Because cold numbs the nerves, you might not know that your toes, finger tips, ears, or nose have frozen. If circulation is cut off for too long you could lose these extremities. Wet fingers, freezing temperatures and a brisk breeze could easily cause frostbite!

Windchill is Old Man Winter's favorite and most effective method of attack. Combined with cold temperatures, wind can quickly rob you of precious body heat.



NWS Windchill Chart

Wind (mph) \ Temperature (°F)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5		36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10		34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15		32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20		30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25		29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30		28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35		28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40		27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45		26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50		26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55		25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60		25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes | 10 minutes | 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph) *Effective 11/01/01*

HOW DO WE FIGHT THIS ATTACK?

The key is to keep body warmth in, and cold air out. The best way to accomplish this is to dress in layers. Pockets of air between the body and the cold insulate the best. Loose fitting clothes make the formation of these air pockets possible. Certain materials retain warmth better under certain conditions than others. Cotton breathes well, but lets cold air through and has almost no insulating effect

when wet. Wool retains heat whether dry or wet, but may irritate your skin and is relatively heavy. Down insulates well when dry but is useless when wet. Rain jackets and parkas made out of some materials keep the rain or snow out, but do not allow for perspiration moisture to escape. This wets the clothing next to your body and robs you of insulating warm air.

Luckily, these problems can be solved by adjusting these layers and using synthetic materials. Gore-tex-type materials for outer shells allow perspiration molecules to escape while keeping rain, snow and wind out. Polypropylene materials transfer moisture away from the body. Many new synthetics have the insulating qualities of down and retain them when wet.

Some people find a combination of old and new to work best. For the coldest temperatures the list of clothing might be: undershorts and t-shirt, synthetic long underwear (tops and bottoms), two pairs of socks, shirt, warm-up pants, wool shirt or wool sweater, wool pants, pac boots, gloves or mittens, hat (that covers ears) and a hooded jacket of synthetic material. Depending on wind or snow, a hooded sweatshirt or another pair of wool socks might be added. Remember: all this should be loose fitting to allow for circulation, air entrapment and freedom of movement.

(Photo ©Ken Marsh, ADFG)

This same clothing, good for standing still, would be inappropriate for someone active. If you have to walk a long distance and then stand still for a long time, you should subtract a layer or two while moving. Sometimes venting, or letting some cold air in, will suffice. Removing a hat or gloves or exposing your neck are effective ways to vent. If you were active the whole time (hiking, skiing or snowshoeing) you wouldn't need as much protection because you would generate your own heat. You should, however, carry extra warm clothes in case of an emergency or while resting. Change or take off layers if they become wet. Getting cold with wet clothing on is a sure way to lose body heat and may lead to hypothermia.

Snowmobile-type suits are very convenient, and many people prefer them for their outer layer.

It cannot be stressed enough how important it is to keep your head covered from the cold. Your head has many blood vessels close to the surface. As the blood cools from exposure, the body tries to

maintain its **core temperature,** and starts to restrict the blood flow to its extremities (hands and feet). With this restricted flow of warm blood, these extremities begin to cool. These are the very first stages of hypothermia. The old saying, “Cold feet or hands? Put on a hat,” is an excellent rule to follow. The body generates its own heat. It does this as it burns (uses) calories. Like any generator, it needs fuel to work. To most people, any excuse to eat more than normal makes sense! A hearty meal before you go out fuels you up. Hot soup or hot chocolate with a high-energy snack works great after you have been on the ice for a while. If you want to stay warm, “feed that furnace!”

WHAT IS WARMER, GLOVES OR MITTENS?

Mittens are definitely warmer, but much more cumbersome. They let your fingers move freely, but don’t allow much dexterity. Most often you will need both. Use gloves to set up for ice fishing and mittens while waiting for action. Because you often need to use bare hands to tie knots and re-bait, a chemical hand warmer like skiers use is a valuable accessory.

WHAT TYPE OF BOOT IS BEST?

Boots that separate you from the ice and trap dead air around your feet are best. They should be waterproof. Many are felt lined with a thick felt insole, rubber-bottom, and leather top. They shouldn’t be tight but should fit well enough so you can walk distances comfortably.

WHY ARE SUNGLASSES IMPORTANT?

Two reasons: They protect your eyes from the sun on bright days, and from the wind.

THINGS TO REMEMBER:

Weather can change quickly. Layering your clothes will allow you to be prepared for a variety of temperatures and weather conditions.

Loose-fitting clothes trap air much better than tight ones and allow greater freedom of movement.

Sometimes it's best to dress in a cool spot after you start putting on your outside layers so you don't over-heat before going out into the cold.

Layered clothing and warm, waterproof "bunny" boots help ice fishers stay warm and dry.

Use this information as a guideline. Everybody is different, so you might need more or less clothing to be comfortable.

Remember these things in your battle with Old Man Winter. If you control and safeguard your body heat by limiting your exposure, you will have a greater chance of winning the war and enjoying the cold rather than just enduring it.

Possible extension activities

1) (Critical Thinking Exercise) Make a list of temperatures and wind speeds (mph) and figure out what the temperature would feel like to your bare skin.
2) (Critical Thinking Exercise) Describe how you would dress for -10 Fahrenheit. You may want to remind them that it depends on what type of activity they will be participating in. Compare the difference between a cross-country skier and ice fishermen sitting on the ice.
3) (Outside Activity) Go outside with a group in the winter and discuss who is appropriately dressed for the weather or suggest clothing they could wear to be more prepared for the temperature. This is a good activity before you go on an ice fishing field trip.