



Black Parrot Paddling, LLC.

Dressing for Cold Water Paddling

By Ron & Suzie Smith

As kayakers we are constantly exposing ourselves to two elements of nature that seek to rob us of body heat...wind and water. This brief paper will cover key elements to understanding the dynamics of how wind, water and especially cold water...water lower than 50°F impact the body. It will also touch on the proper clothing choices and how to select the right clothing for the elements likely to be encountered on a day of paddling.

Most of us are aware of the term “hypothermia” or the cooling of the body’s core temperature. Certainly, hypothermia is a killer of many a boater and can occur when a wide range of conditions may exist. Wearing proper clothing is the first line of defense against hypothermia.

But before hypothermia sets in, a more immediate threat has to be dealt with and that is “Cold Incapacitation” or the body’s inability to perform meaningful tasks or useful work, like assisting in one’s rescue.

Let’s take a look at water temperature’s effect on the body:

<u>Water Temperature</u>	<u>Useful Work</u>	<u>Unconscious</u>
33°F	Less than 5 min.	Less than 15 min.
40°F	7.5 min.	30 min.
50°F	15 min.	60 min.
60°F	30 min.	2 hours
70°F	45 min.	3 hours

x Adapted from the findings of A. F. Davidson, *American Whitewater*, 1966

In a discussion of how to dress properly for paddling, it’s helpful to understand how we get cold:

Radiation: This is the heat your body loses to colder air around it. Heat flows from warmer objects to colder objects. Thus, in colder air, your body tries to heat the world or at least the immediate area around you.

Evaporation: When you paddle you are working and generating heat. If the heat is more than your body needs to function properly the body sheds the excess heat via sweat. The moisture cools the skin and takes some of the body’s heat with it. If the moisture remains on your skin it will continue the cooling process even if the air around you is cooler. This is why a wicking base layer of clothing is so important.

Conduction: When your body comes in contact with something cooler than it is heat flows from your body to that item. This is what happens in immersion. Your body tries to heat the water around you. This is actually the principle that makes wet suits work. A proper fitting wet suit traps a thin layer of water against your skin. Your body heats that water and the neoprene helps provide an insulating barrier. Insulating layers are key in controlling heat loss via conduction. Your body will lose heat 32 times faster in cold water than in the air. Get out of the water!

PO. Box 153

Hamburg, MI. 48139

(734) 878-3689 ronsmith@blackparrotpaddling.com (810) 599-9089

“www.blackparrotpaddling.com”

Convection: This is heat loss due to air passing over the surface of your body. Unless you wear some windproof garments, you will lose heat via convection.

The Answer – Dressing in layers:

The key to staying warm, dry and extending the time where you can assist in your own rescue during cold water paddling is, among other things, to dress in layers. Let's take a look at the three key layers.

Base layer: This is the layer next to your skin. To deal with the potential of heat loss through evaporation the base layer needs to move moisture on the skin away from the skin. This is called "wicking" and is best preformed by synthetics such as polypropylene, Dry-fit, and similar moisture managing fabrics.

Insulating layer: This is the layer that combats heat loss via conduction. This is also the layer where the paddler manages his/her temperature by adding greater or lesser insulating fabrics. This layer should be made up of high insulation fabrics like fleece, neoprene and other heat retaining fabrics, but **not** cotton. **Cotton KILLS.**

Outer layer: This is the layer that will protect you from wind and water. Depending upon conditions it can be a spray jacket, semi-dry top or dry suit. Ideally it is made of a breathable fabric like Gore-Tex so as to help with temperature management. Outer layers should be worn over the insulating layer and under your PFD. However, one of my best pieces of paddling clothing is an oversized short waist length, hooded, Gore-Tex fly fishing jacket that I can slip on over my PFD during rain storms.

Choosing the Right Combination:

Here in the south, typically air temperatures are warmer than the water temperatures we find ourselves paddling in. So heat management is also about not becoming overheated or hyperthermic. So how do you dress for a wide range of temperatures? This is a problem we upper mid-western paddlers face while paddling on the upper Great Lakes in summer. At our July symposium along the Lake Superior shoreline, the lake is often 55°f to 60°F at the surface, but the air temperatures can be in the mid 70's to mid 80's.

The first rule is **dress for immersion**. Going in the drink, is the worst case scenario but that's what you've got to plan for. But, conditions and your skills can allow you to modify your clothing. Let's look at a decision process I go through when deciding what to wear...

- 1) How cold is the water?
- 2) What's the forecast? Sunny, rain, air temperature etc.
- 3) How likely am I to get wet? Am I paddling in the Gulf with waves and surf or am I paddling a flatwater river? If I'm playing in the surf off Ft. Morgan road, I'll be getting wet. If I'm paddling up the Fish River, probably not.
- 4) What's the wind speed and direction? Brisk north winds will be cooler than winds from the south. And what will the wind be doing to the waves and will it be on my bow or stern at the end of the day when I'm tired?
- 5) If I go in, how long might I be in the water? How's my self rescue skills?
- 6) What are the rescue skills of the people I'm paddling with? Could they get me back in my boat quickly?
- 7) How far away is help if needed?

How I answer these questions will determine if I wear a dry suit with a full fleece long john over a wicking base layer or something less.

Other Items:

- Hats & Gloves or pogies. Hands: Your hands and your ability to use them will be critical to an enjoyable day of paddling and especially in any rescue situation. I have found fleece lined pogies to be far warmer than gloves. But they only work when your hands are in the pogies. Consequently, I carry both. Hats: For my money, nothing beats a good wool or synthetic stocking cap. I also have a fleece ball cap with ear muffs. I may look like “Vern” but I never worry too much about style on the water.
- Always carry a dry bag with a spare wicking base and insulating layers in the event you get wet.
- Also, always carry a thermos of a hot decaffeinated drink to aid in warming your core. I have used this on many occasions to ward off the early stages of hypothermia. My favorite is boiling hot water with maple syrup added. It gives you a bit of a sugar kick while warming your core.
- Feet: Seal Skinz waterproof (don't bet on that) stockings with a neoprene bootie works well. If you really want to have dry feet, try Chota mukluks...the fleece lined ones are killer and worked well for us in Alaska.

Sources for Cold Water Paddling Gear:

Northwest River Supplies, www.nrsweb.com. Excellent gear by a company that got it's start supplying rafting gear for running the cold rivers of the Pacific northwest. They have a great guarantee on any of their name brand equipment.

Reed Chill Cheater, www.reednorthamerica.com. I first encountered Reed Chill Wear when I did my BCU Five Star training in Wales. The stuff is amazing and is extremely durable and provides a great alternative to neoprene. They have fleece lined apparel as well that is very comfortable. Reed equipment comes from the U.K. so you've got a cost penalty due to the dollar vs the pound. But for top technical gear it's the best going.

Kokatat, www.kokatat.com. A reliable provider of paddling gear including dry suits and PFD's. Both Suzie and I have Kokatat Gore Tex dry suits and we'd swear by them. However, unless you're planning on paddling on Mobile Bay or the Gulf of Mexico, a dry suit in this area is probably overkill unless you have a tendency to get chilled easily. But remember, a dry suit just keeps you dry. You still need wicking and insulation layers under the dry suit. If you get a dry suit, spend the money for Gore-Tex or some other breathable fabric. A nylon coated dry suit is like paddling in a baggie and you'll be soaked in your own sweat in minutes.



Paddling near Dawes Glacier, SE Alaska, 2008

Hope this information is helpful and I welcome any additional information to make this document more valuable to paddlers. Of course there is a lot more information available on the subject of hypothermia, its causes and treatments. But that's another topic!

Some of the information contained in this paper came from “The Complete Sea Kayaker's Handbook “ by Shelley Johnson, Ragged Mountain Press.