Cold Weather Paddling

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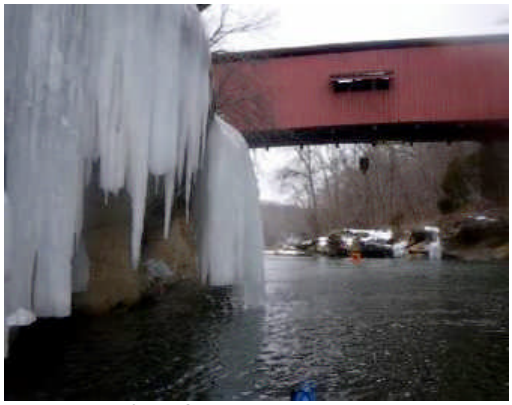
Inuit Fable: *Once upon a time, two Eskimos sitting in a kayak were chilly, so they lit a fire. Unsurprisingly their kayak sank, proving once again that 'you can't have your kayak and heat it too'.*



Sugar Creek, 2010 Ice Falls Trip

Winter is a beautiful and often ethereal time to paddle. It's quiet and the ice formations along lakes and streams can be amazing. It also requires more preparation than paddling in warmer weather. You need to take special precautions since the lower air and water temperature raise the risk factors associated with capsizing and exposure.

I will discuss the risks of cold weather paddling and then how to manage them. This article draws heavily from the American Canoe Association's (ACA) pamphlet "*Cold Water Survival*" and discussions at the Wilderness First Aid (WFA) class that I attended.

The Risks of Cold Water Paddling

At this point, everyone is thinking "hypothermia". You're partially right. Hypothermia can cause serious problems when you're paddling, especially if you fall in. However, if you go into the water without being prepared, there are two cold water effects that can kill you long before hypothermia sets in.

Cold Shock – When you are suddenly submerged in water below 70 degrees, the body receives a shock – you've all gasped when jumping into moderately cold water. Cold water can immediately induce erratic breathing including a gasping reflex, increased heart rate and blood pressure, and general disorientation. This initial reaction can last one or two minutes.

The involuntary gasping reflex can cause a person to inhale water and drown immediately—especially if the paddler is not wearing his PFD. In addition, the heart's response has been documented to trigger cardiac arrest even in younger paddlers.

Cold Water Incapacitation: You lose heat more than 25 times faster in water than in air. If you are not wearing a dry suit or wetsuit, you can lose complete use of your muscles within 3-10 minutes of entering the water. You are not able to swim, put on your PFD, use your phone or radio to get help, or attempt to reenter your boat. You are conscious but unable to help yourself in any way.

A person exposed to cold water and not wearing a PFD often drowns at this phase since they are no longer able to keep their head above water. Some strong swimmers don't wear their PFDs since they feel that they can always make it to shore. However, studies show that strong swimmers even wearing PFDs may be able to swim less than 100 feet in these conditions.

Hypothermia: Hypothermia is the process where the body starts shutting down as its core temperature drops. The onset of this is quick if you fall in the water, since you lose heat in water so much faster than in the air. Although it can also impact hikers or paddlers in their boats if they become damp or are not dressed warmly enough. Make a point to check on other people around you — even experienced paddlers. You want to help them when they start feeling cold and before they start shivering .

Symptoms of Hypothermia*:* My Wilderness First Aid class characterized the symptoms of hypothermia as the "umbles". The symptoms of hypothermia in the order that they occur are:

Mild Hypothermia *(Victim shivering but coherent)*

Shivering: This occurs when the body temperature drops below 97 degree. Shivering is an attempt by the body to increase its activity and maintain its temperature.

Moderate Hypothermia *(Victim my be irrational with deteriorating coordination)*

Grumbles – Loss of Judgment: A person loses their judgment and can no longer properly evaluate their own condition. Shivering may lessen or stop by this point.

Stumbles/Fumbles – Clumsiness and Loss of Manual Dexterity. This occurs when one's body temperature drops to about 93ºF. Mental capacity also deteriorates at this point.

Mumbles – Slurred Speech

Severe Hypothermia *(Victim may resist help, be semiconscious or unconscious, or appear dead.)*

Crumbles: After this point, inward behavior, muscular rigidity, unconsciousness, and then death can occur. The metabolic rate drops as the body cools more. A warmly dressed adult can maintain consciousness for 40 minutes in 40 degree water but they lose any ability to help themselves within 5-10 minutes.

Preparing for Cold Weather Paddling

There are a number of things that you can do to reduce the risks of cold weather paddling:

- ***Know your Conditions:*** Before you head out, check the weather forecast for your trip and know how cold the water is so that you can gauge your risks and properly prepare for them.
- ***Talk to your Group:*** The impacts of hypothermia can be minimized in the field if you catch them early – when a person just starts to feel cold or at the very latest when the person begins to shiver. Before setting out, discuss the weather/water conditions and explain the risks to your group. Tell people to tell someone as soon as they start feeling cold. Stopping early will save the group a lot of time in the long run.

  Be sure to check with the paddlers around you while underway to make sure that everyone is okay.
- ***Eat and Drink Enough:*** Be sure to eat high carbohydrate foods and to drink plenty of water before and during your trip.
- ***Always wear your PDF:*** Wearing your PDF can buy enough time for the other paddlers to get to you and help. As cited above, drowning can be almost immediate if you fall in the water due to the gasp reflex or cardiac arrest. In addition, your PFD helps insulates your torso.
- ***Don't Paddle Solo:*** This rule is especially important in cold water conditions. If you fall in the water and are not dressed in a wet suit or dry suit, you lose motor coordination quickly so that you may not be able to help yourself out of the water even if you are close to shore. Any margin for error is gone.
- ***Wear a Wet Suit or Dry Suit***: The ACA recommends wearing a wet suit or dry suit if the combined air and water temperature is below 120ºF or if the water temperature is below 60 ºF. Wet suits and dry suits are expected for whitewater and open water paddling where you may not be able to get out of the water quickly. Wearing a wet suit and especially a dry suit reduces the impact of cold shock and slows down heat loss from your body so you increase how long you can stay in the water and be able to respond.
- ***Dress Warmly***: If you don't wear a wet suit or dry suit, dress in layers of synthetic fabrics like polar fleece. Your base layer should be a wicking layer. Never wear cotton and be sure to wear a wind-proof layer on top. Be sure to carry extra clothes, hats, wind-proof jacket/pants, and gloves in a dry bag to change into just in case you or someone in your groups falls in.
- ***Wear a Hat***: Be sure to wear a hat that will stay on your head if you capsize since it is reported that 50% of the body's heat loss can be through the head.
- ***Carry the Right Equipment***: Carry equipment to help people who capsize or become cold. This includes:
  - High energy food and warm drinks such as hot chocolate or decaffeinated coffee. Consider carrying a thermos or small camp stove and food. Do **not** give a hypothermic person caffeine or alcohol
  - Dry Clothes – If someone capsizes, get them in dry clothes, jackets, hats, and gloves as soon as possible. These should be carried in a dry bag in your boat.

- Oversized Wind Breaker/Splash Jacket – Carry a large wind breaker or splash jacket that you can slip over a wet paddler including his PFD. If you are on open water, it may take time to get the person to shore.
- Emergency Blanket or Sleeping Bag – Carry a "space blanket", tarp, or sleeping bag that you can wrap around someone to keep the person from losing more body heat after changing into dry clothes. A space blanket takes up almost no space in your boat and is very effective.
- Fire Supplies: Garry Hill recommends carrying supplies for building a fire in your boat. This could include fire starters, lighter and wood since you can't rely on finding dry wood when you beach.
- Cell Phone and GPS: You may need to call for emergency medical help. The GPS helps the responders pin-point your location. In coastal waters, carry a VHF marine radio since cell coverage may be limited.

Helping someone after capsizing in Cold Water

Wetsuits and dry suits are required on sea kayak and whitewater trips in cold water conditions. However, most paddlers on club flatwater trips dress warmly but do not wear wetsuits or dry suits. This works since we paddle moderate streams in the colder months and since most people normally scramble out of the stream quickly if they capsize.

After the person is on-shore:

- The person should dry off and quickly change into dry clothes. Be sure to put a wind breaker or paddling jacket on top as well as wind-proof trousers.
- While waiting to get underway, wrap the person in a blanket, tarp, or sleeping bag to help retain as much heat as possible.
- Give the person something warm to drink and high-carbohydrate food to eat. You may want to carry a thermos for this purpose.
- After they have warmed up, you should resume paddling. The activity of paddling will help warm their body up.

Note: Every cold weather trip should have one or more paddlers wearing wet suits or preferably dry suits just in case someone has to enter the water in a rescue situation.

Treatment of Hypothermia

The treatment of hypothermia is beyond the scope of this article but is summarized in the ACA *Cold Water Survival* pamphlet. This would be good information to carry in the first aid kit that you carry in your boat. I have extra copies of this brochures so send me an e-mail with your address at merlin-3d@sbcglobal.net if you would like a copy or ask me at the pool.

The important thing to remember is to treat this condition early. Treat it when the person first feels cold—before shivering begins. The recommended treatment for even mild hypothermia (shivering) involves warming the victim for several hours before setting out again.

Additional Material

Here are several good resources available that discuss paddling in cold weather.

- ACA Pamphlet *Cold Water Survival* - http://www.americancanoe.org/atf/cf/%7B74254DC2-74B4-446F-92BE-547992272AB7%7D/Cold%20Water%20Survival.pdf
- Cold Water Boot Camp - http://www.youtube.com/watch?v=J1xohI3B4Uc, A 10-minute video graphically showing the effects of cold water immersion.