Traveling on Ice 101 Five Winds Backcountry Ski Club

Gary Ataman Created 2015 09 23 Updated 2017 06 02 Updated 2022 01 11

Traveling on Ice 101

- All participants need to be personally responsible for their safety and need to carry things that will allow them to deal with an "emergency".
- Ensure you have individual and group rescue gear per "What Should I Have In My Daypack" presentation.



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Ice Crossings

 Coming up to a frozen or snow covered lake in the middle of winter raises sudden safety questions for winter travelers

- How thick is the ice?
- Will the ice hold?
- What is the lowest risk way across?
- Is there a high risk area I should avoid?
- What should I do if I or someone else falls thru ice?
- What do I do after I or someone else gets out of the water?

There is no such thing as "100% safe ice."

- Conditions and unseen or unknown factors can render seemingly safe ice suddenly dangerous.
- Consider a river, inflow or outflow of lakes, beaver dams up or down stream and narrow spots in lakes as higher risk areas.



Risk Mitigation – How do we minimize the risk ?

- For all activities one has to weigh the **benefits** versus the **risk**.
- The **benefits** are exploration, developing new skills, enjoying nature, etc.
- The ultimate **risk** is discomfort, injury and death.
- Nobody wants to get injured or die, so what do we do to minimize this risk?
- We can use **personal** and **team** risk mitigation layers.
- **Step 1** is to understand what we are walking on and how it forms and all its possible states.

Ice Building Process; First Ice Forms

- So how does ice form?
- In late fall the air temperature is below freezing at night and cools the lake surface water to the freezing point.
- A thin layer of ice forms on the lake. This is called black ice. It is clear and you can see through it. It grows like a **leaf** with a **crystal** appearance.
- The water just under the ice is between 0 and 4°C



It snows

- It snows.
- The extra load cracks the ice in spots.
- Lake water floods surface locally and creates local slush.



Slush Re-freezes

- Slush re-freezes forming white ice. The ice is filled with air bubbles giving it a white look.
- The white ice is not as strong as black ice.
- Cracks and re-freezes with the winter cold.



White Ice

- Thermals, more snow and moving water levels continue to crack the ice and re-freeze it.
- Ice ridges and cracking and flooding takes place at shorelines and stress points in the ice.



More Snow Falls

- Snow collects.
- Snow weight cracks ice.
- The downward push on the lake ice may push water out at the shore line, creating flooding and thinner new ice conditions.



Snow Cover Floods

- Cycle repeats itself.
- Surface may buckle from cold ice expansion causing localized flooding and drier spots.



New White Ice Forms

- Flooded sections re-freeze.
- Cycle repeats itself.



New White Ice Forms

- Cycle repeats itself all winter.
- At a point the ice is strong enough to hold animals, people, snowmobiles, ice fishing huts, vehicles, etc.



Ice Flooding

- Water could cover good thick ice after a rain or mild spring time weather or ice cracking/flooding.
- Spread out in high risk areas (narrows).



Ice Spiders

- When the lake ice cracks the weight of the snow will push the ice down and the water will be forced to the top of the ice via these cracks.
- This will widen the crack due to the running water flow.
- Usually if temperatures are below freezing this water will stop flowing and re-freeze into black clear ice.
- This creates a spider look in the ice. Old ice is white. New ice is clear.
- Recommended to avoid this ice area. New black ice maybe only paper thin or 12" thick.





Ice Spider



Types of ice

- Beware of ice covered with lots of snow. Snow acts much like a blanket, insulating thin ice and preventing the formation of clear, blue ice. Snow can also hide cracked, weak and open water.
- Daily changes in temperature cause ice to expand and contract, creating cracks and possibly pressure ridges which can affect ice strength.





Different Ice Features



Know your ice color meanings

- Although a useful indicator, color alone should not be relied upon. For instance, ice of any color subjected to a running water force underneath will be weaker than ice not subject to that pressure. In general, you can surmise the following from ice colors:
 - Light gray to dark black Melting ice, occurs even if air temperature is below 0°C. Not safe, its weak density can't hold a load, stay off.
 - White to Opaque Water-saturated snow freezes on top of ice forming another thin ice layer. Most times it's weak due to being porous from air pockets. But if thick enough, its safe.
 - Blue to Clear High density, very strong, safest ice to be on if thick enough, stay off if less than 4 inches (10 cm) thick.
 - Mottled and slushy or "rotten" ice not so much its color but its texture. This ice is thawing and slushy. It is deceptive - it may seem thick at the top but it is rotting away at the center and base. Most prevalent in spring, may be showing signs of browns from plant tannins, dirt and other natural materials that are resurfacing from thawing. Not suitable for even a footstep.

Types of ice

- The production of white ice is proportional to snow fall and slushing events. Snow might accumulate near the shoreline more than in the middle of the lake due to wind breaks from trees and hills. This may produce thicker ice along the shoreline.
- Stay away from the first few meters from shore. Ice expansion and flooding and new ice will be forming. Vegetation may prevent ice from forming due to local heating also.
- Stay away from cracks, pressure ridges, slushy, objects breaking the surface, mounds of snow or darker areas that signify suspect thinner ice.







The sound of ice?

- Good sound ice, sounds like "tick"
- Weak ice, sounds like "tock"
- Occasionally the ice will start a crack due to you skiing on it. You are the extra weight that initiates the crack.
- The water under the ice is varying which causes movement and ice cracking.
- The ice cracking can be heard as a "crack" or "thud" or "StarWars light saber sounds".
- Usually in the spring time or very cold conditions you'll hear ice movement sounds.
- https://www.youtube.com/watch?v=yn6UNLIIxrs

Ice Thickness Guide



Lakes

- Small bodies of water freeze first.
- Medium bodies of water freeze next.
- Followed by larger bodies of water.
- Lake ice is typically 8" plus in the winter months in our ski area.
- Water at bottom of the lake is at 4°C.
- Water just under the ice is between 0 and 4°C.

1	-10°C	
	0°C ice	7
	+4°C	

Marshes

- Since marshes in general are not very deep they freeze first (before small lakes).
- However, marshes contain a lot of decaying vegetation which produces heat. The ice thickness is a function of the outside temperature, snow coverage and marsh vegetation (which acts like insulation) and the marsh water temperature balance.
- The water temperature will be warmer than a lake.



Marshes

- Bushes, Cattails and grasses along with snow insulate the marsh water and prevent it from freezing at times. The heat balance determines if there is ice and how thick it is.
- Open areas with no flow will produce thicker ice. Usually around 6" in our area.
- The water temperature will be warmer than a lake.



Beaver Dams

- Moving water does not freeze.
- Up and downstream of a beaver dam the ice could be paper thin due to water moving downstream through the dam.
- Sometimes you can smell the water before you can see it. This indicates the water is just close to the surface and little to no ice is present.



Landscape and Water Flow

- Look at landscape. If you see valleys ahead you know there is a creek there.
- How big it is and if there is water flow will determine your route selection.



Landscape and Water Flow

- You need to determine if you are heading upstream or downstream?
- If you are heading upstream generally its easier to spot open running water and to take a conservative route around it.
- Heading downstream is generally less obvious if there is running water since you can not see the water until you are close to it.



Beaver Dams Heading Downstream

- If you see a **straight line** in the valley ahead you may be approaching a beaver dam from the upstream side.
- You may not be able to see if the beaver dam is leaking indicating running water and an area to avoid.



Beaver Dams Heading Downstream

- Pick a side to approach the dam where you can avoid the first 2 meters in front of it and any running water areas through the dam.
- Generally the sides will be the lower risk areas.



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Beaver Dams and Water Flow



Beaver Dams Heading Downstream



Beaver Dams Heading Upstream

- You have an advantage heading upstream since you can see the running open water at the base of the dam.
- Running water at base indicates ice will be thin on upstream pond close to the dam.
- Work your way around one side of the dam and step on pond ice a fair distance from beaver dam to minimize the risk of thin ice due to running water.



Beaver Dams Heading Upstream



Beaver Lodges

- The beaver activity and lodge heat might reduce the ice thickness around a beaver lodge.
- Look for any depressions in the snow covering the ice which may indicate thin ice.


Beaver Lodges



River Otters and Beaver

• River otters and beaver activity in the winter keep ice from forming.



Crossing Marshes

- Marshes like this are high risk areas to get wet and should be avoided.
- The decaying matter heats the water so ice may not form.





Crossing Marshes

 Ice will be thinnest amongst marsh cattails and alders/bushes. Usually the snow covers old cattails and air pockets form. You may punch through and actually see water.



Crossing Marshes

- Usually there are one or more small rivers in a marsh. Look for depressions in snow coverage which will indicate a river channel covered by a snow bridge.
- If you have to cross a marsh creek find a spot that is as wide as possible. Look for no flow areas.



Stay away from flowing water



Rivers

- River are high risk areas because of running water.
- Some rivers do freeze over in low flow areas where the river widens out or in prolonged cold conditions.



Rivers

• To lower the crossing risk find a spot where the river widens out and gets deeper. This will greatly reduce the flow to allow good thick ice to form.



Rivers

- Avoid **outside bends** of rivers this is where the water goes and creates the highest flow and thinnest ice.
- Inside bends are shallower and the flow is slower.
- Avoid **narrow parts** of a river. Wider section will have slower flow and thicker ice.



Ice Crossings

Avoid upstream and downstream of beaver dams

Avoid narrow part of lake and outside bends of river systems



Risk Mitigation and Management

So what can we do to lower the risk?

- Read this presentation and practice using it.
- Before event
 - Research
 - Planning route using satellite photos and map contour lines.
 - Review self rescue plan and gear.
 - Review group rescue plan and gear.
- During the event
 - Assess risk on chosen route.
 - Execute plan and use gear as required to get out of situation.
- Post event
 - Review what worked and what did not
 - Revise plan with lessons learned
 - Write up incident report

Risk Mitigation and Management

Before event

- Research
- Planning route using satellite photos and map contour lines
- Talk to others about your route and get input.
- Review self rescue plan and gear
- Review group rescue plan and gear.

Ice Status

- There are various sources of information available to determine the ice status
 - Topo maps. Plan your route to avoid streams, creeks, rivers and narrow lakes.
 - Satellite photos from GoogleMaps.
 - Historical weather information from the past months.
 - Snowmobile club websites.
 - Local webcams monitor activities (Honey Harbour).
 - Talk to locals, ice fisherman, snowmobilers, other leaders, etc.
 - Talk to others who previously completed route.
 - Check conditions personally with ice drill or axe.

Planning Your Route

- Look at the topographic maps of your planned route in detail.
- Avoid moving water (rivers, creeks and necked down lakes.
- Bushwhack around rivers sections.





Satellite photos GoogleMaps



Historical weather information





www.climate.weatheroffice.gc.ca



Daily Mean Temperature for January 2012



Previous Month

January 💙 2012 💙 😡



Ontario Snowmobile Trail Status

- You can use the Ontario Snowmobile trail status website to determine if the lake crossing trails are considered safe for snowmobile traffic.
- http://www.ofsc.on.ca/trail-status.html



- Green trails are in good condition.
- Yellow trails usually indicates there is low snow coverage and the trails are rocky in places. Typical lake trails in yellow indicates its safe.
- Red trails not suitable. Assume lake ice is not thick enough yet.

Example; McCrae and Six Mile Lake area



ONTARIO FEDERATION OF SNOWMOBILE CLUBS

Risk Mitigation and Management

- During the event
 - Execute plan and use gear.
 - Self rescue
 - Leader take charge of situation and divide up tasks so everyone is doing a task.
 - Group rescue effort
 - Get person out of wet gear
 - Get person into dry clothes
 - Warm drink, food
 - Fire
 - Shelter
 - Recover gear and make operational to ski out
 - Call situation in to the bus coordinator and explain situation and review the new plan. Have them repeat it back to you to get full agreement.

So What Can We Do to Lower the Risk?

During event

- Talk to locals (leaders, snowmobilers, hunters, fisherman, cottagers, etc.)
- Test the ice thickness (ice drill, chisel, axe, pole)
- Check old fishing holes with ski pole (check thickness)
- Read ice and landscape
- Read contours of the land
- Ice colours. Stay away for stained ice which indicates water flow.
- Ice sound. The water levels are constantly moving. Every, so often you'll hear a very low thunder sound "thud". It's the ice cracking / moving. This happens a lot in the spring time.
- Ice movement in ponds
- Review individual and group rescue plan and gear

Ask the locals

- If you do not know the area don't make any assumptions. Ask people that know about the area;
 - Other Five Wind leaders
 - Talk to other users such as ice fisherman, snowmobilers, cottagers, etc.
 - Stop at the grocery store, bait shop, local ski store, park office and have a chat, or even drop into a police or fire station and ask questions about the known danger spots and safer spots in the area.

Check Ice Thickness - Fishing Holes

 Using you skiing pole basket you can gauge the ice thickness on your pole.



Check Ice Thickness - Directly

- Looking at ice thickness directly on shoreline where ice gets pushed up.
- Beaver ponds and creeks when water level drops.



Test The Thickness Of The Ice

- Generally this is something you do in the first month of ice up in the Fall and in the Spring when you want to maximize your season and minimize your risk.
- For the majority of Five Winds skiing season the ice is considered thick enough based on local snowmobilers traffic on the lakes/ponds.
- If you plan a route that has to traverse a high risk area (i.e. rivers and narrow lake areas where flow is present) you might want to use an ice drill to minimize the risk by checking the thickness.

Check Ice Thickness

- Long handle axe (2-3 lb)
- Heavy chisel (1.5-2 lb)
- Ice auger (10 lb)
- Ice drill (230 g)
- 8"Ice Anchor Screw (110 g)
- Existing fishing hole (use ski pole)













Ice Thickness Water Movements

 You can determine if the ice is thick enough by watching any open water around tree trucks or open water areas of a river/beaver pond. As you ski/walk if the ice is too thin it will flex and you can see small waves being created. This would be an good indication of thin ice.



Ice Thickness Water Movements

- Beavers ponds movement can be seen by various ice levels around obstacles.
- Areas around these obstacles may be in indicative of thin ice and should be avoided.



Snow Depth vs. Ice Thickness

- Snow depth may indicate new ice on rivers and narrow sections of lakes.
- Older ice allows more snow to accumulate and generally would be thicker than new ice.



Snow Depth vs. Ice Thickness

- Snow depth on top of the ice is an indicator of the ice age.
- Older ice is typically thicker than new ice.



Review self and team rescue gear

- Safety ice spikes or ski poles with metal tips
- Whistle
- Throw rope
- Extra dry clothes.
- Fire starting equipment
- Metal pot/cup
- Shelter
- Food
- Cell phone
- All in water proof bag(s)







 Cross-country skier Sergey Ivanov glides across frozen Lake Baikal with friends



• You see a transition from white ice to clear ice ahead.



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• Recording the trip on his GoPro camera, Sergey skis along what at first appears to be a thick sheet of ice.



• All of a sudden, Sergey hits a patch of thin ice, which cracks, sending him plummeting into the freezing water



• The ice broke and Sergey fell beneath the water, struggling to grasp onto something and haul himself out.



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• Sergey grabs hold of a sheet of ice and uses it to haul himself towards his friend, but the ice cracks again.



 After splashing around Sergey manages to grab hold of his friend's ski pole in order to pull himself out.


Falling Through Thin Ice

• Back on thicker ice, it's not long before Sergey pulls himself back up to standing and gets going again.



The Ice is Breaking and Your Going In

- When you see you are going in, close your mouth to reduce the chance you will gasp in water.
- If you can, try to slow your fall to minimize the chance your head will go under. The general method is to spread your arms and legs as you go in and pull your legs together as you get about belly button deep and swing your arms down as you approach shoulder depth.
- Once in the water, get your breathing under control (this may take up to a minute).



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Getting Out

- Turn to face the direction you came in from (presuming the strongest ice is probably where you came from).
- Swim back to the edge of the ice.
- Find and deploy your safety ice spikes or use your ski poles metal spikes if you are alone. Stab one into the edge of the ice.
- Remove your back pack, snowshoes, skis if possible. Some people recommend unbuckling waist belt in high risk ice crossings to speed up the exit process.
- Lay arms on ice surface. You may not have the strength to pull your wet body up and over the ice surface
- Blow your whistle to alert others in the group (as required).





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Getting Out

- If you have a throw rope you can get at easily, throw it back to anyone you can who is still on good ice. Obviously the end of the rope should be attached to you (ideally with a loop or climbing binder).
- If you have poles of any sort, place them across the ice a foot or so from the edge (to support your weight better).
- Get the second safety ice spike in or use you ski pole metal spike.
- Swim your legs up behind you.





Getting Out

- Pull with the spikes/ski poles, lift with your elbows to get your body over the edge while kicking with your feet (a frog kick works well). It may take several kicks to get you out.
- If someone throws you a throw line, loop it around your body under your armpits.
- Your hand mobility will be reduced greatly in only a few minutes in the frigid water.
- Once out, roll away from the edge or drag yourself with the claws until you are sure the ice is strong enough to get up on your hands and knees and proceed until you are confident you can stand on the ice.





Breathing - The Gasp Reflex

- Breathing: The gasp reflex can be unavoidable. If you manage to get water in your larynx it can make breathing difficult or impossible for a short period of time. That is why rescue people suggest putting your hand over your mouth and nose as you enter the water. There is some difference of opinion by experts about how big a risk the gasp reflex is. Studies have shown that people can learn to control it with training and practice. It is unlikely that casual ice users will have this training.
- If you are under the water most people can't hold their breath in cold water for more than a few seconds.
- Get on with getting out. Your ability to grip things like safety ice spikes and ski poles and throw ropes is greatly reduced in a few minutes. If you lose hand dexterity pass them through the pole strap as people pull on other end.

Safety Spikes/ Pole Spike Placement

- There is a tendency to place the spikes as far forward on the ice as you can reach.
- Stabbing your spikes a foot closer to the edge will let you get more weight over them and your elbows, making it easier to pull yourself out.
- The purpose of the spikes is to let you lift your upper body over the ice edge without sliding back in.
- If the ice breaks under you. Try again until you find solid ice.
- Roll to solid ice.

Using Safety Ice Spikes

• Using safety ice spikes to pull yourself out of the lake and onto the ice.



Extend Ski Poles Reach

 Loop poles strap together to extend reach if required









Using Your Ski Poles

• Using ski poles to pull yourself out of the hole (similar to ice spikes).





Using Your Ski Poles

• You can spread the load sometimes by using your poles horizontal to reach solid ice/snow/ground.



So What Can We Do If We Do Fall In?

Plan A is to have the tools to be able to save yourself

- Generally dressing in layers to trap air will help you to float.
- Spread your arms out to catch on good ice as you break through.
- Keep your mouth closed (avoid gasp relax in cold 4°C water).
- Turn around to the last good ice.
- Use safety ice spikes or your ski pole carbide ends to anchor to good ice to be able to pull yourself out.
- Blow whistle if you need help and you are far from group
- Kick feet to thrust your legs up and pull yourself out.
- Skis and snowshoes will restrict your leg movements.
- Once on top of ice stay spread-out and roll to good ice
- Your clothes will freeze fast so you need to get out of all the wet clothes and into dry ones.
- Put on dry clothes in water proof bag in your daypack.
- Emergency gear

So What Can We Do If We Do Fall In?

Plan B having the group as your back up

- In addition, to individual items.
- 15m throw rope in the group used to help from a distance.
- Skis and poles, long branches, clothes, etc.
- Extra dry clothes, shelter, fire, cup/pot warm drink/food.
- Team effort (fire, new dry clothes, shelter, gear, etc.)
- Chemical heat pads.
- Emergency space blanket.
- Extra food.

Leadership and Teamwork

- The leader needs to lead and coordinate the activities.
- Everybody work as a team.
- Help the victim(s), leader, group and yourself .
- Combine resources.
- Divide up tasks to get to end goal (i.e. everybody home safe).

Wet Foot Soaker

- Remove boot and wet sock and drain boot.
- Put on dry socks and cover with a plastic bag and put ski boot back on.



Wet Up to Your Waist

- Strip down and put on all new dry clothes or stay wet depends on the weather conditions and how far you need to ski to the bus.
- If you plan to strip down, you may need help because your wet clothes will freeze fast (especially zippers).
- Get help from others to help you strip down and get all dry clothes on.
- Stand/sit on a foam or a buddies back pack or pile of pine branches to stay off the snow.

Wet Up to Your Waist

- Chemical heat pads can be used in your socks and mitts.
- Have someone work on de-icing your skis and bindings. This might require a fire to get water out of the binding mechanism. Or passing hot water through the mechanism.

Total Wet from Full Immersion

- Depending on weather and how far you are from the bus will decide if you totally strip down to get dry clothes on.
- It is usually better to 100% strip off all wet clothes and get 100% dry clothes on than keep some wet clothes on.
- The leader should coordinate the activities and assign tasks to dry group members such as;
 - Helping wet person strip down
 - Dry clothes collection from others
 - Collecting wood and starting a fire
 - Shelter next to fire out of wind
 - Scrape skis and bindings of ice
 - Warm drink/food



Total Wet from Full Immersion

- Dr Gordon Giesbrecht, (Professor Popsicle) has a good website to learn about what he calls his 1-10-1 formula for survival in cold water. http://www.umanitoba.ca/faculties/kinrec/about/giesbrecht.html
- He talks about controlling your breathing and what to do once you get out and signs of hypothermia.
- <u>http://www.coldwaterbootcamp.com/pages/home.html</u>
- <u>http://www.youtube.com/watch?v=5gOW8ZaYqHA</u>
- <u>http://www.youtube.com/watch?v=DyBVWrqvkEg</u>
- <u>http://www.youtube.com/watch?v=0PAwzPgRYOI</u>

Mild Hypothermia, Core = 35°-32°C

- Fine (hands/feet) and then gross (legs/arms) motor impairment occurs.
- Get person into 100% dry clothes.
- Shivering is your body trying to generate heat.
- Calorie replacement with warm fluids containing sugars. Make sure that the person is capable of ingesting liquids without aspirating.
- External heat can be applied to high heat transfer areas such as the underarms and sides of the chest.
- Light exercise such as walking produces heat but should only be attempted after a mildly hypothermic person is dry, has had calorie replacement and has been stable for at least 30 minutes.
- A warm shower or bath may be tolerated by an individual that is alert and mobile. However, this could be fatal to a moderate to severely hypothermic person and should be avoided in this case.

Moderate Hypothermia, Core = 32°-28°C

- The person has been in the water for an extended period. This case is not likely to occur since all our ski groups stay close to each other.
- The person loses all fine and gross motor control. Shivering usually stops. The person may lose consciousness
- External heat can be applied to high heat transfer areas such as the underarms and sides of the chest. Chemical warming pads, camp fire, and partners body heat.
- This is a serious medical emergency requiring proper handling and treatment and in severe cases, immediate transport to a medical facility. Great care must be taken in handling a moderate or severely hypothermic person. Extraction from the water must be as gentle as possible to avoid precipitating ventricular fibrillation. Arms, hands, feet and legs should not be rubbed or manipulated. The person should be placed n a horizontal position and wet clothing should be gently removed and the body insulated as best as possible using dry blankets, clothing or other protective materials. If shelter is available, keep the person protected from the elements and insulated from the cold ground or snow using sleeping bags, clothing, back packs or even evergreen boughs.

Severe Hypothermia, Core >28°C

- If vital signs are present, the person should be rewarmed as previously described but not allowed to sit or stand until rewarmed. Under no circumstances should the person be placed in a warm shower or bath, no oral fluids or food should be given and no attempts should be made to rewarm with exercise, including walking.
- In any hypothermic individual, core body temperature continues to decrease after rescue. It is called 'afterdrop' and may last many hours in a moderate to severely hypothermic person when no shivering is present and metabolic heat production may be only 50 percent of normal. Even gradual warming of the heart will help avoid cardiac arrest and ventricular fibrillation.

Fire and Shelter

- Select an area where wood is readily available and is out of the wind and sheltered.
- Dig down to forest floor (if possible) and pile dead fire wood logs for a parallel fire base.
- Create a fire wood pile as flooring for people to stand on.







Use of a Fire and Emergency Blanket

• The emergency blanket can be used to block wind/snow/rain and reflect the fire heat.



Recovery Area and Fire

- Assuming the snow is 3 feet deep and you can not dig down to solid ground (which is preferred) you will have to make your fire on top of the snow.
- Pile large diameter fire wood all in a line to create a fire base.
- This fire base will burn down into the snow which will create water which tends to put a fire out. To keep the fire base out of the snow it is important to keep adding wood parallel to the base so that new wood above the water keeps the fire going before original base burns through.
- Make a fire wood pile that acts as a floor where people can sit and stand on next to the fire and off of the snow.

Fire and Shelter

- Use trees, pine branches, garbage bag, emergency blankets, day packs, etc. to create a shelter next to the fire.
- Pool resources and efforts.
- Divide tasks amongst the group.
 Everybody working on something.
 Activities keep people warm.





Keeping the Rest of the Group Warm

- While the wet person is your primary concern don't forget about the rest of the group as they may be wet from skiing and now they are just standing around. Put them to work doing tasks(collect wood, make fire, make shelter, repair skis, etc.)
- You may need a fire to keep them warm too. They might have gotten wet assisting in the rescue too.
- You may need a shelter to keep the group out of the wind, snow or rain while the wet person recovers.

What If You Can Not Get 100% Dry

- You lose heat 25 times faster when wet than dry. So it is very important to get 100% dry.
- However it sometimes happens you do not have 100% dry clothes available.
- In these cases wring out the excess water and wear a garbage bag and then put dry clothes over the garbage bag. The garbage bag will protect your dry clothes.
- Garbage bags can worn as a shirt with a head hole and 2 arm holes or as a skirt with one hole for your waste or one bag per leg as chaps. They provide a wind proof solution. They are waterproof from rain however you will trap all body moisture in them.

Warm Clothes, Drinks and Food

- Pool resources and efforts.
- Goal is 100% warm dry clothes and warm food for victim and other group members.



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CHOCOLAT

Post Event Back At Home

- Post event
 - Review what worked and what did not. Talk to group participants.
 - Write up incident report and forward it to the Five Winds safety committee.
 - Revise Five Winds documentation/process/training with lessons learned as required.
 - Update this presentation to pass on knowledge.



Other Sources of Information

- <u>http://www.wikihow.com/Rescue-Someone-Who-Has-</u> <u>Fallen-Through-Ice</u>
- <u>http://www.dnr.state.mn.us/safety/ice/thickness.html</u>
- <u>http://www.coldwaterbootcamp.com/pages/home.html</u>



Summary

- Research route and talk to others about high risk areas.
- Ensure you have individual and group rescue gear per "What Should I Have In My Daypack" presentation.
- Read this presentation and think about applying it.
- Leaders are responsible for the route so choose low risk.
- Stay away from flowing water.
- Stay away from beaver dams.
- Stay away from snow/ice depressions and inconsistencies.
- Alders, marsh cattails and other bushes will create deep snow pockets and result in thin ice.
- Spread out in high risk areas.