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STAY SAFE AND WARM IN THE PNW

If you follow these tips and methods, you will most likely be a warm and happy snow camper. If you don't, you could suffer from the cold and wonder why you went snow camping.

BE INFORMED

For the latest information on avalanche risks, please visit the Northwest Avalanche Center website:

<https://www.nwac.us/>

To estimate likely temperatures, use the Mountain Forecast website. It provides likely temperatures and wind speeds at different elevations for well-known peaks:

<https://www.mountain-forecast.com/>

AVALANCHE RISKS

There is always a risk of avalanches and we must take precautions. If you have a transceiver please wear it. If you have other avalanche safety gear (probe and shovel), please bring them. There are areas where large trees have been blown down by avalanches and/or the avalanche air blasts and that means avalanches can strike in places where they don't often strike. I recommend reading *Avalanche Essentials* by Bruce Tremper, Mountaineer Books, 2013.

OTHER RISKS

In addition to avalanches caused by snow, mud, or rock slides, there are risks such as hunters, falling rocks, falling trees, slipping off ledges, falling through snow and ice, hypothermia, stove accidents, etc. We can't eliminate risks, but we can take precautions, such as:

- Wear bright clothes
- Pack the ten essentials (first aid, etc.)
- Wear appropriate foot traction (snowshoes, microspikes or crampons)
- Use walking poles with snow baskets
- Bring a headlamp (headlamps can get accidentally turned on in your pack, so keep batteries separate.)
- Use the right batteries: Backcountry Access recommends that you use name brand Alkaline batteries for your avalanche transceiver because a declining Alkaline battery is easier to notice. Lithium batteries perform better in cold weather, but the wrong type can fry your headlamp.
- Carry a snow shovel, probe, and transceiver.
- Read stove safety instructions.

MOUNTAIN TERRAIN SNOWSHOES AND TREKKING POLES

For the Pacific Northwest, only use *mountain-terrain* snowshoes with trekking poles. Do not use low traction flat-terrain or rolling-hill terrain snowshoes (snowshoes with heel lift recommended). <https://winterbackpacking.com/snowshoe-tips/>. Equip your poles with snow baskets to prevent the poles from sinking too far into soft snow.

More to know here: <http://blog.oplopanax.ca/2010/10/how-to-kill-yourself-snowshoeing/>

PACKING TIPS TO AVOID HYPOTHERMIA

With regard to hypothermia risks and recovery:

- Pack sleeping bag and extra warm camp clothes in waterproof dry sack or plastic bags, even if your pack is waterproof.
- Be sure that your water is secure and leak-proof.
- As a precaution against wet gear and frozen tubes, avoid internal-pack hydration reservoirs in winter.
- Carry water on the exterior of your winter pack and/or hip belt in a solid Nalgene bottle that can double as a hot-water bottle at night or in an emergency. In freezing weather, you can turn the bottle upside down while hiking to prevent ice blockage.
- Avoid cotton clothes! Cotton contributes to hypothermia risk because it does not wick moisture away from your skin.

HOW TO STAY WARM IN CAMP

Staying warm while hiking doesn't require heavy insulation, but once you reach camp it is essential to have dry temperature-appropriate gear. Carry extra layers, wool socks, insulated coat and booties, plus mittens and a cap.

There are different ways to layer clothing, but a typical system includes:

- Synthetic leg and top layers
- Wool or fleece top mid layer
- Insulated coat
- Rain pants and parka hard shell large enough to go over insulated coat

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People have different needs. Typically, on uphill routes, I hike without thermal base layers, unless the temps are below 25° F or high winds are expected. Once at camp, I add thermal layers under my clothes. Some people get by with layers and a synthetic or down jacket with only 8 ounces of 800 fill, but for superior comfort in 10–32° F temperatures, a puffy jacket with 16 ounces or more of 800 down is recommended.

KEEP FEET DRY AND WARM

An important rule for keeping feet and hands warm is “blood flow = warmth.” If your gloves or boots are too tight, the tightness will reduce your ability to keep your hands and feet warm. On long hikes, feet tend to swell, so it is good to wear boots that are slightly larger and if you use a two-sock (thin liner + heavier outer sock), be sure to wear these socks when testing the fit of the boots. If your boots are too tight, circulation is reduced which makes your feet colder.

If your boots are older than a year, consider adding new waterproofing with a fabric and leather waterproofing product.

If you use waterproof (not water resistant) winter boots consider using vapor-barrier socks to prevent soaking your boots with sweat. Some hikers use plastic bread bags to achieve the same effect. The vapor-barrier socks go between your thin sock liners and your regular socks.

The best method to ensure warm feet at camp is to not rely on the sweaty or wet boots you used during the day. Use layered wool socks *and* insulated booties instead.

Some booties are not well-insulated on the bottom, so in some conditions, it is helpful to add wool insoles or DIY insoles made from insulated reflector bubble wrap. If you leave camp to relieve yourself in the middle of the night, wear your boots. Insulated booties have very poor traction.

Prevent frozen boots: Follow these steps to prevent your boots from freezing at night: While you are still wearing your boots boil a liter of water and put the hot water in a Nalgene bottle. Make sure the lid is tight and place the bottle inside the bottom of your sleeping bag. Then place boots in a waterproof stuff sack or plastic bag and place bag inside the foot of your sleeping bag. Be aware that in freezing weather your boots may be wet from snow melt or sweat. This means that if you remove the boots from the warmth of your feet, the boots can freeze solid quickly. To prevent this, remove the boots and place them directly in the sleeping bag with

the hot water bottle. Boots can freeze in shapes that do not easily fit your feet. Do not put frozen boots in your sleeping bag without a hot water bottle because your feet will be cold at night. Do not attempt to thaw frozen boots with a stove or direct flame because the synthetic materials will melt almost instantly before the boot thaws.

MULTI-GLOVE STRATEGY

You need light gloves while hiking and more insulated gloves or mittens while in camp. For extra warmth, use a thin wool glove liner with your camp gloves/mittens. A 3-glove strategy is recommended because the light-weight hiking gloves will often get wet from sweat or snow that melts on contact with body warmth. The wetness makes the gloves useless and even dangerous. The gloves will not dry overnight, so the second pair of gloves is needed. Warmer insulated mittens are great in camp but too hot for hiking. G&F Waterproof Double Thermal Winter Gloves are excellent for wet conditions but for cold windy conditions insulated double-layer mittens are the best protection.

SLEEPING BAG, PAD, AND MATTRESS REQUIREMENTS

For safety and comfort, a sleeping bag system that is rated 10–20-degrees warmer than the expected temperature is recommended. It is often colder than the forecast. Think of your sleeping bag’s rating as a *survival* rating, *not* the comfort rating. That is, a “0° F” bag is only *comfortable* in 10–15° F. The Pacific Northwest winters are mild and most hikers use sleeping bags rated 0–15° for most trips. If you are buying a sleeping bags for shoulder season or winter season use, bags rated 15° are recommended for shoulder seasons and 0° degrees for winter.

However, no sleeping bag will keep you comfortably warm when sleeping on snow unless it has a mattress under it.

When sleeping on snow or ice, you **MUST** have an air-mattress under your sleeping bag regardless of the rating of your sleeping bag. Two mattresses (an air mattress and a solid-core foam mattress) are recommended. Air mattresses are the primary protection from the cold coming up from the ground, but air mattresses can fail, so an additional foam mattress should be regarded as a standard practice to both protect your air mattress and add

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STAY SAFE AND WARM IN THE PNW

additional R-value. A single solid-core foam mattress will only provide around 2 R-value. For snow camping, have a system (foam + foam or foam + air) that provides a 5+ R-value under your sleeping bag. If your R-value is 5–7, and you have a warm sleeping bag, you will feel no cold from the snow. (R-values for different mattresses are listed online.) Both pad and mattress need to be full length. The solid pad is mainly for use around camp.

Tip: Some people believe that better R-value comes from putting the foam on top of the air mattress. For safety always put the foam under the air mattress to help prevent air-mattress punctures.

Bonus tip: To fit your larger winter sleeping bag into your pack, turn the bag inside out. This will release the air faster when compressing it.

HEAD GEAR

To keep your head warm and protected from wind, bring a wool or fleece hat that can cover your ears. Wool and fleece provide some warmth even when wet. If high winds are likely or you are traveling in the mountains, pack goggles and a balaclava to protect your face. Use UV snow (ski) goggles or category 4 sunglasses to protect your eyes from sun glare and snow blindness.

BRING A STOVE

If you're an ultralight backpacker who camps without a stove or hot food, please adopt a winter exception and bring a reliable stove and warm meals as well as backup no-cook meals. We will be in no campfire zones. Both canister fuel and liquid fuel stoves will work, but liquid fuel stoves perform better in colder and windy conditions. Carry multiple fire-starting tools (lighter and flint). Stoves are critical *survival and comfort* tools in freezing conditions because they can supply water from melted snow, nighttime warmth from hot water bottles, and hot meals.

LEAVE NO TRACE

Always practice "leave no trace" ethics. Leave nothing in the wilderness—no cherry pits, no sunflower seed shells, no orange peels, no toilet paper, no detergents, no camp fire scares, nothing. Learn more here:

https://en.wikipedia.org/wiki/Leave_No_Trace

Leave what you find, keep wildlife wild, and be considerate of other visitors.

DON'T POOP IN THE SNOW

You don't need a trowel when snow camping, but not because you have a snow shovel. Snow melts, so what you bury isn't buried at the end of the season. The best way to care about streams and the environment is to pack it out. Consider using a Wag Bag. These products turn liquids into solids rapidly and seal up securely.

Bonus tip: Be aware that there is not a lot of toilet paper in the Wag Bag packages, so carry some extra.

ROAD CONDITIONS AND TIRE CHAINS

Drivers should carry chains, a shovel, and a saw or ax in the car, for icy roads, the ability to dig out from snow, and, if necessary, to clear down limbs blocking the road. And, don't forget your trail pass.

Tip: Attach your car keys to the inside of your pack lid to help prevent loss on the trail.

Trailhead theft and break-in tips

Remove everything of value from your car. Leave glove box door open to show no items of value. Remove any paperwork from the car such as envelopes (thieves are looking for credit cards).

Tip: You will want extra shoes, socks, and a shirt after the hike for the ride home. To help prevent car break-ins, keep these items in an ordinary paper grocery bag because such bags have a low-perceived value. Fold the bag and leave items on top so everyone can see that there is nothing of value.

Every person should arrive at the P&R self-sufficient.

Backpacking Gear Checklist [1 of 2 pages]

Snow camping, Spring & Fall [20-45°F conditions]

Use this 2-page list to check for types of gear you will need for a 2-day, single-night trip that includes snow camping. The 2nd page includes a clothing checklist, which includes other essentials such as trekking poles. Be aware that extreme sunburn is a common hazard from UV radiation reflected off snow.

IMPORTANT: A heavy pack increases the chances of injuries and balance-related accidents on steep terrain so it is important to keep weight down as much as possible without sacrificing safety. Use this list to compare gear weights (oz) if you need to lower your pack weight. This is a light and ultralight gear list that provides a base weight in the range of 18–24 lbs including some extras. Be aware that on some trips it is often necessary to strap snowshoes to your backpack (adding an additional 4 lbs).

Essentials	(1–2 lbs)	Big Three+	(10–11 lbs)	Packed Cloths (options)	(2–3 lbs)
<input type="checkbox"/> Headlamp with batteries	2.55	<input type="checkbox"/> Backpack	32.00	<input type="checkbox"/> Rain jacket	10.65
Fire-starters		Sleeping system		<input type="checkbox"/> Down jacket	7.70
<input type="checkbox"/> Flint	.55	<input type="checkbox"/> Sleeping Bag (15°)	29.45	<input type="checkbox"/> Shirt (smart wool)	10.10
<input type="checkbox"/> Lighter (full)	.80	<input type="checkbox"/> Plastic bag	.40	<input type="checkbox"/> Shirt capilene	3.45
<input type="checkbox"/> First Aid*	4.00	<input type="checkbox"/> Stuff sack	.95	<input type="checkbox"/> Thermal underpants	4.70
<input type="checkbox"/> Bandage Roll (4.5" x 4YD)		<input type="checkbox"/> Sleeping pad (air)	17.50	<input type="checkbox"/> T-shirt (extra)	4.30
<input type="checkbox"/> 2 ABD Pads (2 quan., 5"x9")		<input type="checkbox"/> Sleeping Pad repair kit	1.05	<input type="checkbox"/> Socks (wool)	2.60
<input type="checkbox"/> Triple layer Pads (3 quan., 3"x4")		<input type="checkbox"/> Foam pad	13.75	<input type="checkbox"/> Liner socks (nylon)	1.15
<input type="checkbox"/> Large band-aids (3 quan., 2.5"x3")		<input type="checkbox"/> Straps for sleeping pad (x2)	.55	<input type="checkbox"/> Mittens	2.90
<input type="checkbox"/> Band-aids (3 quan., 3 inch)		<input type="checkbox"/> Tent (3-s solo)	12.00	<input type="checkbox"/> Smartwool Glove liners	2.00
<input type="checkbox"/> Band-aids (2 quan., 2 inch)		<input type="checkbox"/> Fly	13.00	<input type="checkbox"/> Buff	2.65
<input type="checkbox"/> Antiseptic Towlettes (2 pks)		<input type="checkbox"/> Poles with pole sack	10.05	<input type="checkbox"/> Beanie	2.70
<input type="checkbox"/> Iodine Prep pad (1)		<input type="checkbox"/> Snow tent stakes (6)	5.95	<input type="checkbox"/> Waterproof stuff sack	0.40
<input type="checkbox"/> Alcohol Prep Pad (1)		<input type="checkbox"/> Stuff sack	.65		
<input type="checkbox"/> Antibiotic Ointment Pads (4)					
<input type="checkbox"/> Burn cream (3 pk)		Gear depending on circumstances*		Cooking Supplies	(4–5 lbs)
<input type="checkbox"/> Burn jell (1 pk)		<input type="checkbox"/> Mt Terrain Snowshoes	4 lb 0.20	<input type="checkbox"/> Bear-proof food container	28.00
<input type="checkbox"/> Hydrocortisone Cream (1 pk)		<input type="checkbox"/> Micro-cleats	13.45	<input type="checkbox"/> Spoon (Bamboo)	.40
<input type="checkbox"/> Ibuprofen tablets (4)		<input type="checkbox"/> Crampons	27.95	<input type="checkbox"/> Quart pot	4.40
<input type="checkbox"/> Moleshin (5 pre-cut pieces)		<input type="checkbox"/> Ice Axe	16.60	<input type="checkbox"/> Pot lid skillet	2.30
<input type="checkbox"/> Leukotape (1 yrd)		<input type="checkbox"/> 2-way radio (1)	9.45	<input type="checkbox"/> Cup	2.10
<input type="checkbox"/> Latex gloves		<input type="checkbox"/> Water filter (trips above 32°F)	13.50	<input type="checkbox"/> Liquid-fuel stove* (29.05)	
*All items with labels and expiration dates.		<input type="checkbox"/> knife	.60	<input type="checkbox"/> Stove	8.65
Extra First Aid		<input type="checkbox"/> Tent Footprint	4.95	<input type="checkbox"/> Fuel connector	2.35
<input type="checkbox"/> Scissors	.55	<input type="checkbox"/> Straps for snowshoes	2.00	<input type="checkbox"/> Wind shield & base plate	2.65
<input type="checkbox"/> Tweezers	.30	<input type="checkbox"/> River shoes	6.00	<input type="checkbox"/> Stove repair kit	.55
<input type="checkbox"/> Duck tape 2x50"	.60	<input type="checkbox"/> Hat with Mosquito netting	3.10	<input type="checkbox"/> Stove kit bag	.65
<input type="checkbox"/> Tooth brush + paist	1.40			<input type="checkbox"/> Fuel bottle (11oz capacity)	12.40
<input type="checkbox"/> Sewing repair kit	.50	*More on next page		<input type="checkbox"/> or Fuel bottle (20oz capacity)	18.80
<input type="checkbox"/> Whistle	.50				
<input type="checkbox"/> Compass	2.55			Fluids	
<input type="checkbox"/> Map	3.30			<input type="checkbox"/> Nalgene bottle (32oz)	6.15
<input type="checkbox"/> Sunglasses	1.15			<input type="checkbox"/> or 1LT Smartbottle	1.2
<input type="checkbox"/> Sunscreen	1.10			<input type="checkbox"/> Narrow Nalgene bottle (16oz)	3.65
<input type="checkbox"/> Chap-stick	.14			<input type="checkbox"/> Water bottle carabiner	1.25
<input type="checkbox"/> Wag bag or Biffy Bag	2.55				
<input type="checkbox"/> Toilet paper	.55				
<input type="checkbox"/> Sanitary wipes (2)	.45				

Don't Lose Your Gear

Even without snowfall during the night, low winds (5–10 mph) can cause drifts of snow to cover gear left outside your tent, such as stoves, food canisters, etc. The snow that is soft around your tent in the evening can become extremely hard by morning. If you leave snowshoes and trekking poles outside your tent, place them in a vertical position. Place all other gear inside the tent or tent vestibule. You can keep water containers and electronics from freezing by placing them inside your sleeping bag along with any clothing you want to be warm for the next day.

IMPORTANT: This checklist does not include items for all wilderness dangers or contingencies. Use this tip list at your own risk.

Backpacking Gear Checklist [2 of 2 pages]

Snow camping, Spring & Fall [20-45°F conditions]

This checklist shows examples of recommended clothing, an example food list, and gear to bring and leave in the car. Use this checklist and do a visual inspection to avoid leaving important gear at home or in your car.

When calculating pack weight, be aware that some of the gear listed below may end up in or attached to your pack, such as snowshoes and trekking poles. You may need extra straps to attach your snowshoes to your pack.

Clothes checklist (options/wearing)*

<input type="checkbox"/> Pants	14.70
<input type="checkbox"/> Briefs	2.80
<input type="checkbox"/> T-shirt	4.25
<input type="checkbox"/> UV hoody	7.85
<input type="checkbox"/> Thermal shirt	3.60
<input type="checkbox"/> Capilene shirt baselayer	3.45
<input type="checkbox"/> Buff	1.45
<input type="checkbox"/> Liner socks (nylon)	1.15
<input type="checkbox"/> Socks (wool)	2.60
<input type="checkbox"/> Belt	2.00
<input type="checkbox"/> Gloves (lite)	2.60
<input type="checkbox"/> UV hat	1.75
<input type="checkbox"/> Gaiters	6.30
<input type="checkbox"/> Boots	3 lb 2.70
<input type="checkbox"/> Hiking poles+snow baskets	15.65
<input type="checkbox"/> Camera (wearing)	1 lb 12.90
<input type="checkbox"/> Lens cover & harness	4.06
<input type="checkbox"/> Extra battery	1.75
<input type="checkbox"/> Extra Flash card	0.15
<input type="checkbox"/> Plastic bag for camera	0.40
<input type="checkbox"/> Cell phone	4.00
<input type="checkbox"/> Keys	0.70
<input type="checkbox"/> Wallet	1.25
<input type="checkbox"/> (Glasses + extra)	1.60

Food (examples)

Snacks	
<input type="checkbox"/> Fruit/nut bars (3)	4.50
<input type="checkbox"/> Snickers	1.95
<input type="checkbox"/> Nutella/Walnut buritto	3.60
Lunch	
<input type="checkbox"/> Yogurt	5.30
<input type="checkbox"/> Sandwich	6.60
Diner options	
<input type="checkbox"/> Tortillas (Cheese)	9.35
<input type="checkbox"/> Thai noodle soup	2.20
<input type="checkbox"/> Ramen or Phö	2.50
<input type="checkbox"/> Salt (to speed water boil)	0.40
<input type="checkbox"/> Olive oil	2.45
<input type="checkbox"/> Miso soup	0.45
<input type="checkbox"/> Tea	0.23
<input type="checkbox"/> Cookies	2.20
<input type="checkbox"/> Chocolate	2.00
Breakfast options	
<input type="checkbox"/> Muesli	11.00
<input type="checkbox"/> Oatmeal (2 pks)	2.70
<input type="checkbox"/> Almond milk	9.20
<input type="checkbox"/> Mocha/Coffee/Coco	1.15
Lunch	
<input type="checkbox"/> Bagel & Cheese	5.85
<input type="checkbox"/> Water	36.00

For the car

- After-hike car clothes
- Shoes
 - Socks
 - Shirt
 - Plastic bag for boots
 - Gas money
 - Forest/Park/Snow pass
 - Cell phone charger cord
 - Saw (for downed trees)
 - Shovel for snow
 - Tire chains, pliers, gloves
 - Flash light
- If stuck in snow storm:
- Run the motor about 10 minutes each hour for heat.
 - Open the window enough to avoid carbon monoxide poisoning.
 - Periodically check the exhaust pipe to be sure it does not become blocked.

*For gathering needed items prior to day of hike.

Circumstantial / Miscellaneous gear

<input type="checkbox"/> Mt Terrain Snowshoes	4 lb 0.20	Sometimes still necessary at higher elevations or in shaded forests
<input type="checkbox"/> Cathole Trowel	2.85	(Not necessary in snow conditions. Pack your poop out.)
<input type="checkbox"/> Pack cover	3.15	(Not necessary in temperatures below freezing.)
<input type="checkbox"/> Ice Axe	16.50	(Essential in late season hard snow. Not useful in early-season fresh snow.)
<input type="checkbox"/> Crampons	28.00	(Essential in late season hard snow. Not recommended for regular hiking boots.)
<input type="checkbox"/> Seat pad	2.15	(Optional)
<input type="checkbox"/> Tent ground cloth	4.45	(Not necessary on snow.)
<input type="checkbox"/> Water filter	13.75	(Not recommended in freezing weather.)
<input type="checkbox"/> Pants (extra)	10.00	(Recommended if river fording and/or wet weather is anticipated.)
<input type="checkbox"/> Hydro flask (full)	29.50	(Optional)
<input type="checkbox"/> Compression bag	3.35	(Optional)
<input type="checkbox"/> Snowshoe extensions	13.05	(Rarely needed. Not needed in spring.)
<input type="checkbox"/> Alkaline batteries (extras)	0.80	(Recommended)
<input type="checkbox"/> Bear-proof food container	32.00	(Required in many locations.)
<input type="checkbox"/> Bear spray	12.30	(Optional. If you want self-defense, this is the only method I recommend.)

IMPORTANT: This checklist does not include items for all wilderness dangers or contingencies. Use this tip list at your own risk.