Millet
FISH & GAME
ASSOCIATION

A PRACTICAL GUIDE TO

WILDERNESS SURVIVAL

When the plan falls apart — the skills that bring you home

01 Preparation & The Ten Essentials

Most wilderness emergencies are not caused by a single dramatic failure — they are caused by a chain of small problems that compound because the person wasn't carrying the right gear, didn't tell anyone where they were going, or pushed on when they should have turned back. Whether you're hunting, hiking, fishing, snowmobiling, or canoeing, survival starts at the trailhead, not in the bush.

File a Trip Plan — Every Time

Before you leave, tell a reliable person three things: **where you're going**, **when you'll be back**, and **when to call for help if they haven't heard from you**. Leave a written copy on the dashboard or at home with your route, vehicle description, and plate number. Search-and-rescue works far faster when they know where to start looking — a good trip plan can cut rescue time from days to hours.

The Ten Essentials

Carry these on *every* trip into the backcountry, even for a day hike or an afternoon on the lake. They fit in a small daypack and weigh under 5 lbs together.

CATEGORY	ITEMS
Navigation	Topo map of the area (paper), compass, GPS or phone with offline maps loaded
Illumination	Headlamp with fresh batteries plus a spare set — hands-free light is non-negotiable
Sun & eye protection	Sunglasses, sunscreen, brimmed hat — snow-blindness and sunstroke happen fast in open country
First aid	Compact kit: gauze, tape, blister pads, tweezers, pain reliever, any personal meds, tourniquet
Fire	Two independent sources: lighter, storm-proof matches in waterproof case, ferro rod. Plus tinder.
Repair & tools	Fixed-blade knife, multi-tool, 50 ft of paracord, duct tape wrapped around a pencil
Nutrition	One extra day's food beyond what the trip requires — jerky, bars, nuts, hard candy
Hydration	Full water bottle plus filter, purification tablets, or a metal cup for boiling
Emergency shelter	Mylar space blanket, contractor bag, or ultralight bivy — enough to survive one unplanned night
Signaling	Whistle (on a lanyard around your neck), signal mirror, fully-charged phone, ideally a satellite messenger

Dress for the Worst Case

Cotton kills — it soaks up sweat and rain and pulls heat from your body. Dress in **wool or synthetic layers**: a moisture-wicking base, an insulating mid-layer (fleece or puffy), and a waterproof wind-shell. Carry a spare pair of dry wool socks in a zip-top bag. A wet foot at –10°C becomes a frostbitten foot within hours. Always carry a toque and gloves, even in summer at higher elevations.

> **■ THE SURVIVAL RULE OF THREES**
>
> A healthy person can survive roughly **3 minutes without air**, **3 hours without shelter** in harsh conditions, **3 days without water**, and **3 weeks without food**. This is your priority order. In almost every Canadian emergency, shelter and warmth come before water, and water comes long before food. Starvation is rarely what kills lost travellers — exposure is.

02 Shelter: Staying Warm & Dry

In cold, wet, or windy conditions, hypothermia can set in within hours — sometimes faster. A shelter doesn't need to be pretty; it needs to block wind, shed precipitation, and trap the heat your body is already producing. Build it before dark, before you're exhausted, and before you think you need it.

Site Selection — Get This Right First

- **Dry ground.** Avoid low spots, dry creek beds, and depressions where cold air settles and water pools.
- **Out of the wind.** Look for natural windbreaks — dense conifers, rock faces, fallen timber. Do not camp on exposed ridges.
- **Away from hazards.** Scan overhead for dead branches ("widow-makers") and leaning trees. Avoid avalanche paths, rockfall zones, and unstable slopes.
- **Near resources.** Water within a few minutes' walk and dead standing wood nearby. Don't camp right on the water — stay 30+ m back for warmth, insects, and wildlife.
- **Visible.** If you're lost, pick a spot visible from the air — a meadow edge, not deep under heavy canopy.

Three Shelters You Can Build in Under an Hour

1. Debris Hut (any season, no tools needed). Find a downed tree or prop a long sturdy pole between a low branch and the ground to form a ridge. Lean shorter branches along both sides to build a ribcage. Pile leaves, boughs, and forest debris at least 60 cm thick over the frame — thicker is warmer. Stuff the inside with dry leaves or boughs to insulate you from the ground. A good debris hut will keep you alive in freezing temps with no fire.

2. Tarp Lean-to (if you have a tarp or space blanket). Tie a ridgeline between two trees at chest height. Drape the tarp over and stake the back edge to the ground, leaving the front open. Orient the open side 90° away from the wind, and if possible face it toward a reflector fire. Fast to set up and easy to heat.

3. Snow Trench / Quinzee (winter). In deep snow, dig a trench just wider than your body and long enough to lie down. Roof it with boughs or a tarp, then cover with packed snow. Block the upwind end. Snow is an excellent insulator — a quinzee can sit at –1°C while it's –30°C outside. Always poke a ventilation hole and keep digging tools *inside* with you in case of collapse.

Insulation From the Ground Matters More Than the Roof

You lose more heat to the cold ground beneath you than you do to the air around you. Before you worry about the roof, build a thick bed: **at least 15 cm of compressed boughs, leaves, grass, or your pack**. If you skip this step, even the best shelter will not keep you warm.

> **■ RECOGNIZING HYPOTHERMIA**
>
> Early signs are the "umbles" — **stumbles, fumbles, mumbles, grumbles**. Clumsiness, slurred speech, irritability, and uncontrollable shivering mean your core temperature is dropping. Act immediately: get out of the wind, swap wet clothes for dry, add layers, drink something warm if you can, and get into a shelter or sleeping bag. Once shivering *stops* but the person is still cold, hypothermia is severe — this is an emergency.

03 Fire Craft

Fire is warmth, dry clothes, hot water, cooked food, a signal, and — maybe most importantly — morale. A person with a fire has a plan. The difference between people who can light a fire in bad conditions and people who cannot is almost entirely in the *preparation*, not the spark.

The Fire Triangle — and Why Fires Fail

Fire needs three things: **heat, fuel, and oxygen**. Almost every failed fire fails because one is missing. Most commonly: the fuel is wet, the fuel is too big for the available heat, or the structure is packed so tightly that air can't reach the flame.

Gather More Than You Think You Need — in Three Sizes

STAGE	SIZE	WHAT TO COLLECT
Tinder	Hair-thin, dry, fluffy	Birch bark (burns even wet), dry grass, pine needles, shredded cedar bark, dryer lint, cotton ball with petroleum jelly, fatwood shavings. A double handful.
Kindling	Pencil-lead to pencil-thick	Dead lower branches of standing conifers — these stay dry in rain. Split larger sticks to expose dry interior wood. A thick double armload.
Fuel	Thumb-thick to wrist-thick	Dead standing wood, split if wet. Avoid anything lying on damp ground. Enough to last the whole night — usually far more than first-time builders gather.

The Teepee — Reliable in Most Conditions

1. Clear a 1 m circle down to mineral soil or snow-pack it solid. In deep snow, build a raised platform of green logs to keep the fire from sinking.
2. Place a loose handful of tinder in the center.
3. Build a small teepee of pencil-thin kindling over the tinder, leaving a gap on the upwind side to feed the flame and add air.
4. Surround that with a larger teepee of thumb-thick sticks.
5. Light the tinder from the upwind opening. As the kindling catches, feed progressively larger sticks one at a time — never dump a pile on.
6. Once it's burning steadily, rebuild it as a long-log fire for sleeping alongside, or add a reflector wall of green logs to push heat toward your shelter.

Wet Weather Tricks

- **Find the driest wood in the forest:** dead branches still attached to standing trees, especially under dense conifers.
- **Split, don't collect.** Baton a dead limb open with your knife and a rock — the inside wood is bone-dry even after days of rain.
- **Birch bark is magic.** The oils in the bark light even when the bark is wet. Peel only loose, already-curling pieces — never strip living trees.
- **Build a platform.** Never light a fire directly on wet ground or snow. Lay a floor of green sticks or flat rocks first.
- **Protect the flame.** Shelter it with your body, your hat, or a lean of bark until it's established.

> **■ ONE MATCH, EVERY TIME**
>
> Practice the one-match fire in your backyard, in the rain, with gloves on, before you need it. The goal isn't to prove anything — it's to force you to prepare properly. If you have enough tinder, enough kindling, and good structure, one match is plenty. If you don't, a full lighter won't save you. Carry **two independent ignition sources** and keep one on your body, not in your pack.

04 Water & Purification

You can go roughly three days without water, but dehydration impairs your judgment and coordination long before that — often within hours of hard exertion. In Canadian backcountry, water is usually plentiful but rarely safe to drink untreated. **Giardia** and **cryptosporidium** live in even the clearest alpine streams, and a single bad drink can put you down for two weeks.

Finding Water

- **Follow the terrain down.** Water runs to the lowest point — valleys, draws, and the base of slopes.
- **Listen.** Moving water carries surprisingly far in still air, especially at dawn and dusk.
- **Watch wildlife.** Game trails converge on water. Heavy bird activity at dawn often marks a water source.
- **Look for greener vegetation** in a drier landscape — a band of willows or alders signals seasonal water.
- **Collect dew, rain, and snow.** A tarp rigged as a funnel catches surprising volume in a rain shower. Melt snow — don't eat it straight, which costs more body heat than it gives in water.

Four Ways to Make Water Safe

METHOD	KILLS WHAT	NOTES
Boiling	Everything biological	Gold standard. Rolling boil for **1 minute** at low elevation; **3 minutes** above 2,000 m. Works regardless of how cloudy the water is.
Filtration	Bacteria, protozoa	A 0.1–0.2 micron filter (Katadyn, Sawyer, MSR) removes giardia and crypto. Does *not* remove viruses — rarely a concern in Canadian backcountry.
Chemical tabs	Everything (slowly)	Chlorine dioxide tablets: drop one in 1 L, wait 30 min (4 hrs for crypto in cold water). Light, cheap, reliable backup.
UV pen	Everything biological	Stir for 90 seconds in clear water. Requires batteries. Ineffective in cloudy water unless pre-filtered through a cloth.

Pre-Filtering Dirty Water

If your only water is muddy or silty, pre-filter it before treatment or it'll clog your filter and burn through chemicals. Pour it through a bandana or shirt layered over a container, then let it settle for 30 minutes and decant the clear layer off the top. Better yet, dig a small **"gypsy well"** 1–2 m back from a muddy pond: a hole the size of a dinner plate will slowly fill with much clearer, gravel-filtered water that you still need to purify.

Signs You're Getting Dehydrated

Dark yellow urine, dry mouth, headache, and that "can't-be-bothered" fatigue are all early warnings. By the time you feel genuinely thirsty, you're already behind — in cold weather especially, your thirst response is suppressed and you dehydrate without noticing. A useful rule: **if you haven't peed in four hours, you need to drink right now**.

> **■ DON'T RATION WATER — RATION SWEAT**
>
> The old survival-movie trick of saving your last sip "just in case" is exactly backwards. Water sitting in your bottle does you no good — water in your bloodstream keeps your brain working. Drink when you're thirsty, and spend your effort finding more. The real water-saver is working smart: travel in the cool hours, rest in the shade, and don't push hard enough to drench your clothes in sweat.

05 Signaling & Getting Rescued

The moment you realize you're lost, the single most important decision you make is **stop moving**. A lost person who stays put with a fire and a signal plan is usually found within 24–48 hours. A lost person who keeps walking often wanders out of the search area entirely. Pick a visible spot, make yourself big, and let the searchers come to you.

S.T.O.P. — The Four-Letter Survival Plan

- **S — Stop.** The moment you suspect you're lost, sit down. Don't walk one more step. Have a sip of water and a snack. Panic is the enemy.
- **T — Think.** When did you last know where you were? Can you backtrack along your own tracks? Do you have a map, a compass, a phone with signal?
- **O — Observe.** Look and listen carefully. Landmarks, the sun's position, drainage direction, sound of roads or water. Check your gear inventory.
- **P — Plan.** Make a deliberate decision. If you're genuinely lost and help is likely coming, stay put, build shelter, and signal. If you must move, move with a plan — not with panic.

Signals That Work

SIGNAL	HOW TO USE IT
Whistle	Three sharp blasts = universal distress. Carries far farther than a shout and takes almost no energy. Keep it around your neck.
Signal fire	Build three fires in a triangle or a straight line, about 20 m apart. Keep dry fuel ready. For a smoke signal in daytime, pile green boughs or damp moss on a hot base — white smoke against dark forest, dark smoke against snow.
Signal mirror	On a sunny day, a mirror flash is visible from aircraft up to 50 km away. Aim by making a V with your fingers, bracket the target aircraft between them, and walk the reflected light into the V.
Ground-to-air symbols	Stamp out large symbols in snow or build them from logs / rocks / spruce boughs. **V** = assistance required. **X** = medical help needed. Make them 3+ m tall with high contrast.
Firearm	Three evenly-spaced shots is a recognized distress signal. Pause 1 minute, repeat. Conserve ammunition.
Phone / PLB / InReach	Even without cell signal, try texting 911 (works in many Canadian areas) or moving to higher ground. A satellite messenger or PLB is the single biggest upgrade you can buy for backcountry safety.

If You Have Cell Signal, Even Briefly

Call or text **911** first and stay on the line as long as possible — dispatch can triangulate your position. If the call drops, send a text: texts often get through on weak signal when calls will not. Include your **coordinates** (most phones show them in the compass or maps app), the **nature of the emergency**, and any **injuries**. Then conserve battery: airplane mode, screen off, keep the phone close to your body for warmth.

When the Aircraft Arrives

Helicopters and fixed-wing aircraft often make one pass to confirm, then circle back. Stay visible. Wave both arms overhead in a slow Y shape — this is the universal "yes, I need help" signal. One arm raised is "no, I'm fine." Do not run around; stand still in the open. At night, a steady flashlight pointed at the aircraft is more visible than a flickering one.

> **■ THE HARDEST PART IS STAYING PUT**
>
> Lost people feel a powerful, almost biological urge to keep moving — to "do something." Fight it. Once you have shelter and a fire, your job is patience, not progress. Keep signals ready, stay warm, stay hydrated, and wait. Search-and-rescue teams are professionals, they have your trip plan, and they are coming. Walking "just a little further" is how lost people end up 40 km from where searchers are looking.

06 Navigation: Map, Compass & Stars

GPS is wonderful — right up until the battery dies, the screen cracks, or the satellites are blocked by a canyon wall. The traveller who knows how to read a paper map and shoot a compass bearing always knows roughly where they are. Learn these skills before you need them, and carry the tools even when you think you won't.

Reading a Topographic Map

A topo map shows the shape of the land through **contour lines** — each line connects points of equal elevation. Lines close together = steep. Lines far apart = gentle. Closed loops = summits or depressions (depressions have hash marks). Every fifth line (the "index contour") is thicker and labelled with its elevation. Learn to recognize the fingerprints of terrain:

- **Ridges** — contour lines make a U or V pointing *downhill*.
- **Valleys and drainages** — contour lines make a U or V pointing *uphill*, toward higher ground. Water flows down the axis.
- **Saddles** — low points between two peaks, often the easiest crossing route.
- **Cliffs** — contour lines packed so tight they touch or stack.

Using a Compass

A compass needle points to magnetic north, which is offset from true (map) north by a regional angle called **declination**. In central Alberta declination is roughly **13–15° east**; check your map's declination diagram. Modern compasses have an adjustable declination screw — set it once and you can work directly with map (true) bearings.

Shooting a bearing (you know where you want to go):

1. Lay the compass on the map with the edge connecting your location to your destination, direction-of-travel arrow pointing toward the destination.
2. Rotate the compass housing until the orienting lines align with the map's north–south grid lines (N on the dial pointing to map north).
3. Read the bearing off the dial at the index mark.
4. Lift the compass, hold it flat and level in front of you, and rotate your whole body until the red magnetic needle sits inside the orienting arrow ("red in the shed"). The direction-of-travel arrow now points your heading.
5. Pick a distinct landmark along that line — tree, boulder, ridge notch — walk to it, and reshoot. Landmark by landmark is more accurate than staring at the needle.

Triangulation (you don't know where you are): identify two or three recognizable landmarks you can both *see* and *find on the map*. Shoot a bearing to each, then draw the *back-bearing* (bearing + 180°) on the map from each landmark. Your position is where the lines cross.

Natural Navigation — When You Have Nothing

- **Sun.** In the Northern Hemisphere the sun tracks across the southern sky. Rises roughly east, sets roughly west, peaks due south around solar noon. A vertical stick's shadow points roughly north at midday.
- **Analog watch trick.** Point the hour hand at the sun. South is halfway between the hour hand and 12 (daylight savings: halfway to 1).
- **Polaris (the North Star).** Find the Big Dipper. The two stars at the end of the cup ("pointer stars") line up — extended about five times their own spacing — on Polaris. Polaris sits within 1° of true north and never moves. Face it, and north is straight ahead.
- **Moss on trees** is *not* a reliable direction indicator. Ignore the old Boy Scout saying.

■ IF YOU MUST TRAVEL — "HANDRAIL" TO A LINEAR FEATURE

If staying put isn't an option, don't pick a destination on a map and hope to hit it exactly. Pick a **linear feature** you can't possibly miss — a highway, a river, a powerline, a shoreline — and aim for it. Intentionally offset your bearing 10° to one side so when you hit the feature you know which way to turn to reach help. A river is a thousand metres wide in terms of target; a specific cabin is three metres wide.

07 Wilderness First Aid

Wilderness first aid is different from urban first aid: help is not ten minutes away, it may be ten *hours* away. The priorities shift accordingly — prevent things from getting worse, stabilize what you can, and plan the evacuation. A proper wilderness first aid course (WFA, 16–20 hours) is the single best investment any backcountry traveller can make; this page is a reminder, not a substitute.

The Primary Survey — First 60 Seconds

Before you touch the patient, **scan the scene for danger** — rockfall, traffic, aggressive wildlife, live wires, thin ice. A second casualty helps no one. Then check, in order:

- **A — Airway.** Is it open? Tilt the head back (unless spinal injury is suspected, then jaw-thrust).
- **B — Breathing.** Look, listen, feel for 10 seconds. Start rescue breaths / CPR if absent.
- **C — Circulation.** Check pulse. Scan for major bleeding and control it immediately.
- **D — Disability.** Suspect spinal injury after any fall or high-impact hit. Stabilize the head.
- **E — Environment.** Get the patient off the cold ground and out of the wind. Hypothermia kills injured people fast.

Severe Bleeding

Apply **direct pressure** with a clean cloth or gloved hand and hold it — really hold it, for at least 10 full minutes without peeking. Don't remove soaked dressings; add more on top. If pressure fails or the bleeding is arterial and life-threatening on a limb, apply a **tourniquet 5–7 cm above the wound** (not on a joint), tighten until bleeding stops, and write the time on the patient's forehead. Tourniquets save lives; modern doctrine is to use them early for serious limb bleeding.

Common Wilderness Injuries

INJURY	FIELD RESPONSE
Sprains / strains	RICE — Rest, Ice (cold stream water in a bag works), Compression (elastic wrap), Elevation. Immobilize and evacuate. An ankle sprain is a deal-breaker far from the trailhead.
Fractures	Stabilize the joint above and the joint below with a rigid splint (trekking poles, sticks, rolled pad) padded with clothing. Check circulation beyond the splint every 30 min (warm, pink, pulse). If a bone is through the skin, cover with sterile dressing and evacuate urgently.
Burns	Cool under clean water for 10+ minutes. Cover with a non-stick dressing. Do not pop blisters. Burns larger than the patient's palm, or on face / hands / joints, need evacuation.
Hypothermia	Dry clothes, shelter, insulation from the ground, warm sweet drinks if conscious. For severe cases (not shivering, confused), handle very gently — rough movement can trigger cardiac arrest.
Frostbite	Do NOT rub or rewarm if there's any chance of re-freezing. Protect the area and evacuate. Rewarm in 38–40°C water only when you can keep it warm permanently.
Heat exhaustion / stroke	Move to shade, remove excess clothing, cool with wet cloths and fanning. Sip water + electrolytes. Altered mental status = heatstroke = emergency; cool aggressively.
Blisters	Treat *hot spots* the moment you feel them — tape or moleskin. A full blister: clean, leave the roof on if possible, cover with a donut of moleskin.
Anaphylaxis	Bee sting, nut exposure. Swelling of face / throat, trouble breathing. Use the patient's epinephrine auto-injector immediately, repeat in 5–15 min if no improvement, evacuate urgently.

The Wilderness First Aid Kit

Beyond a standard kit, add: tourniquet (CAT or SOFT-W), Israeli pressure bandage, SAM splint, triangular bandages, quality trauma shears, a roll of 2" athletic tape, irrigation syringe, tweezers, benadryl, ibuprofen, loperamide (for backcountry diarrhea), and any personal prescriptions with a few extra days' supply. Keep it dry in a zip-top bag inside a dry-bag.

■ THE DECISION TO EVACUATE

Ask: "Can this person safely continue the trip, or could waiting make things worse?" If in doubt, evacuate. Conditions that warrant immediate evacuation: any head injury with loss of consciousness, chest or abdominal pain, severe dehydration, suspected spinal injury, deteriorating mental status, or any wound or illness you are not equipped to manage. Activating a PLB or satellite messenger early is far safer than waiting until a marginal situation becomes critical.

08 Wildlife Encounters

Most wildlife wants nothing to do with you. The vast majority of encounters end with the animal walking, running, or flying away the moment it becomes aware of a human. The dangerous situations almost always involve surprise at close range, a female with young, an animal defending a food source, or a habituated animal that has lost its fear of people. Your behavior in the first ten seconds determines how the encounter ends.

Black Bear vs. Grizzly — They Respond Differently

In Alberta, you may meet either. Identification matters: **grizzlies** have a shoulder hump, a dished face, and short rounded ears; **black bears** have no hump, a straight face profile, and taller pointed ears. Colour is unreliable — black bears can be cinnamon or blonde, and grizzlies can look almost black.

SITUATION	WHAT TO DO
You spot the bear first, at a distance	Back away quietly the way you came. Do not run. Give the bear room — at least a few hundred metres. If possible, detour widely around.
Surprise encounter, bear is aware of you	Stand your ground. Speak calmly. Make yourself look big — raise your arms, stand beside a partner. Do not scream, do not run. Slowly retreat while facing the bear.
Bear bluff-charges	Stand your ground — running triggers pursuit. Most charges are bluffs. Have bear spray drawn, safety off, ready at 4–5 m.
Grizzly makes contact (defensive)	Play dead. Lie flat on your stomach, hands clasped behind neck, legs spread so you can't be rolled. Stay still until the bear leaves the area entirely.
Black bear attacks, OR any bear enters your tent / stalks you	Fight back with everything you have. Predatory attacks are rare but real. Target the face and eyes. Do not play dead.

Bear Spray — Your Best Tool

Bear spray is more effective than a firearm in most encounters — it stops the bear without requiring a fatal shot under pressure. Carry it on a chest or hip holster where you can draw in under two seconds, never buried in your pack. Practice the draw. Spray in a wide sweeping pattern starting at 4–5 m, aiming slightly low so the cloud rises into the bear's face. Be aware of the wind — downwind use can disable you, not the bear.

Cougar

Cougars are ambush hunters. You'll rarely see one that isn't already stalking you. If you encounter a cougar: **stop, face it, make yourself as large as possible**. Open your jacket, raise your pack overhead, speak loudly and firmly. Never turn your back and never run — you trigger a chase response. Back away slowly while maintaining eye contact. If attacked, fight back hard and aim for the eyes and face; cougars usually abandon prey that fights effectively.

Moose

Moose cause more human injuries in Alberta than bears. They are huge, fast, and aggressive during the fall rut (September–October) and when protecting calves in spring. Warning signs: ears laid back, hackles up, lip-licking, head lowered. If a moose charges, **run — and put a tree, vehicle, or large rock between you and the animal**. Unlike bears, moose will rarely pursue you once you're behind cover. Never position yourself between a cow and her calf.

Food & Camp Hygiene

- Cook and eat at least 60 m from where you sleep. Never in your tent.
- Hang food, toiletries, and anything scented 4 m off the ground and 2 m from the trunk, or store in a certified bear-resistant container.
- Change out of cooking clothes before sleeping. Store them with the food.
- Pack out all scraps and trash — a habituated bear is a dead bear, and it starts with your orange peel.

> **■ MAKE NOISE IN BEAR COUNTRY**
>
> The single most effective way to avoid a dangerous encounter is to avoid the encounter entirely. Talk with your partners, call out "hey bear" around blind corners, and make noise near loud streams and in thick brush where you can't see or hear far. Bear bells are largely useless — your voice carries farther and sounds unmistakably human. A bear that hears you coming leaves; a bear you surprise at 5 m does not.