"SURVIVAL IN THE COLORADO ROCKIES"

Preface:

The following text are the class notes from a course entitled “Survival in the Colorado Rockies” given by Papa Bear Whitmore of the “Wilderness Institute of Survival Education”, P. O. Box 1235, Wheat Ridge, CO 80034.

Before You Go Afield

1. Always leave a message with someone as to where you are going, the route and when you expect to return.

2. Identify all your gear (packs, fishing vests, etc.) so if found they know it was yours and not an unrelated lost item.

3. Tell the person that is monitoring your return that only the county sheriff can call out the local search and rescue team. That will save time if you don’t return to your schedule.

4. Remember, the time lag between when you got lost, to when you were expected home, could be days. Also consider another 24-36 hours before the actual search begins. Plan accordingly.

Survival:

80% Positive Mental Attitude
10% Equipment
10% Skill & Knowledge

Three (3) Basic Requirements for Survival:

1. Must be in an Area with Shelter Capabilities.

2. Must have fuel for both a Survival Fire and a Signal Fire.

3. Must be Close to a Clearing that can be used for Signaling Aircraft.

Priorities

1. Shelter: Must be capable of building a shelter regardless of who you are, where you go, or the time of the year.

2. Fire: To provide heat, security, signaling (via smoke), light, and companionship.

3. Be where you are: Spend some time accepting your situation and stay put.

4. Water: You have a minimum requirement of four (4) measured quarts of water a day.
5. **Signal**: You must have the capability of signaling.

6. **Food**: Food should be your last priority after all others have been met or prepared for. The average person can survive for up to 5 weeks without food.

**Shelter Equipment**

The following is a list of survival equipment that you need to carry and know how it can be used.

1. 50’ parachute cord - need to tie poles together to form A frame or lean to type shelters.

2. Two gold backed mylar blankets. One blanket is to be used for the roof of the shelter with the silver side toward you to reflect your body heat back to you. Then place a 6x6 or 6x10 foot 4-6 mil mylar sheet over the reflective blanket so it does not tear in the wind. Then cut and place pine boughs to a depth of 12 inches in a shingle like fashion to form the roof. Place the other reflective blanket on the floor of the shelter (silver side up, no rocks underneath) and cover with 10-12 inches of pine boughs to form an insulating mattress. If the clear mylar is large enough, part of it can be used to cover the opening to prevent rain from entering. The shelter must be made to keep you dry.

3. 6x10 foot, 4-6 mil mylar - discussed previously

4. Scotch brand 33 cold weather electrical tape - this tape is good to -30˚F (ordinary tape won’t adhere at cold temperatures) and can be used to tape the mylar and reflective blanket together and around the poles at strategic places.

5. Sheath knife - unless you have a serious knife you cannot rapidly cut the required pine boughs to build an adequate shelter. You are fighting time, it may be raining or night my be rapidly approaching. A folding knife simply can’t do it!, they are not good under hard stress. Get a knife with a blade of Rockwell hardness 58 or better cold stainless steel. Puma white hunter, Winchester, Remington, Gerber make good knifes. Some of these brands may be no longer manufactured.

6. “Gerber” folding saw - this is a more cost effective alternative ($7) than a sheath knife for making a shelter.

7. Folding, lightweight snow shovel - needed if you are in snow country.

**Shelter - Snow Caves**

If you can’t stay dry, or can’t get dry after you build it, don’t build one. You must be prepared to build one and stay dry or this is not a viable shelter. If you plan to be exposed to snow conditions frequently you should build your first snow cave under non emergency conditions. Find a snow bank so your snow cave can be waist high. Dig an entrance angling upward. The entrance should allow you to crawl in the cave. The inside cave should be wide enough to prevent you from getting wet if you roll over at night. The ceiling should be rounded so water formed on the ceiling drips down the sides and not on you. You also want a 6” diameter breathing opening where you plan to have your head.
Don’t burn anything in a snow cave, carbon monoxide is a real danger. The inside of a snow cave will be 26-28°F and your body temperature will raise the internal temperature 2°F. At this temperature the snow will not melt. However if you burn candles you will raise the temperature above 32°F and it will melt around you. Use only one slow burning unscented candle for light or use a chemical light.

You also must insulate the floor. Use a survival blanket, gold side to the snow. Then put your foam pad down or 5-6” of pine boughs over the blanket to insulate you from the snow. If it snows during the night and covers your air port don’t worry. Oxygen flows through new fallen snow (but not compacted snow).

**Starting a Fire**

You should carry 5 methods of starting a fire.

1. Strike anywhere matches carried in a waterproof container. Do not carry butane type lighters because they are dangerous and can explode.

2. 4/0 steel wool burns in very windy conditions but for a very short time. The tinder must be very dry. Placing the steel wool across the terminals of a small 9V battery or two 1 1/2 volt batteries in series will ignite the steel wool. Keep the steel wool dry in a zip lock bag. Only 4/0 steel wool will burn.

3. Magnesium fire starter. This method is not good in wind because the magnesium shavings are very light and tend to blow away.

4. Miners Carbide. Excellent for wet conditions because water liberates acetylene gas from the material. The gas is very visible. However the material decomposes in about 14 months even when kept in a small vinyl 34 mm. film can.

5. “E-Z fire”. This is napalm or jellied gasoline. This will start anything on fire. No need to use tinder. Just place on top of 2-3” diameter branches and ignite. This material burns but does not explode.

Do not use round rocks in building a fire pit. The fact that they are round indicates that they were formed by exposure to water and can explode when heated. Use irregular shaped rocks to be safe.

In wet conditions, the bark of a standing dead aspen tree is dry burnable material.
Water Purification

Depending upon the time of year, water could be a key to survival.
- Under normal conditions a person needs at least four (4) quarts of water daily.
- Under desert conditions you need nine (9) quarts of water daily to survive in temperatures up to 120 degrees.

Note: Under desert conditions “No Water” + “No Motion” = 3 days life expectancy.

Sources of Water:
The best source of water is through the use of a “Solar Still” which under the right conditions can supply up to a quart of water per day. (See construction of Solar Still)

Purification: There is a number of ways you can purify surface water:
- Boiling - if you boil water you must do it twice for 10 - 15 minutes each (Required to kill the Trapezoids and Cysts in the water).
- Aqua Purification Tablets - two tablets per quart of water. Shake vigorously -- let off pressure, wait fifteen (15) minutes -- let water flow threads, close and wait another fifteen (15) minutes before drinking.
- 2% Tincture of Iodine - 10 drops per quart (use same procedure above).
- Chlorine Bleach - 10 drops per quart, must be pure and natural (use same procedure as above).
- Mechanical Filter - PUR Traveler is the best mechanical filter as it has a 1 micron filter that can filter up to 100 galleons before replacing.
- Using Snow:
  -- Take snow closest to the ground as it will have a high moisture content.
  -- Pink Snow - contains an airborne algae that is deadly in large quantities. This phenomena is found during the spring at elevations greater than 7000 feet.
  -- Black snow - caused by Snow Fleas. These Snow Fleas can only live in a 26 to 28 degree temperature range.

Signals

You must have various signaling capabilities available to you to help you to be located. Aircraft have flown directly over a lost person and didn’t see them because the person did not have a good signal method.

1. Ground to ground. In high humidity conditions sound travels low to the ground. The Acme whistle is a high frequency whistle that can also be heard by search dogs. Three short blasts is the international distress signal. Repeat as required.

2. Ground to air. The best device is a GI signal mirror because it can be pointed to the aircraft.
3. Smoke flares. Produces 1-5 acres of day glo orange smoke. These tend to be very expensive ($75).

4. 4x6 foot day glo orange cloth. This placed in a clear area is a real attention getter.

5. Your gold backed mylar blanket can also be used in a similar manner to the cloth. Never use the silver side, many things on the ground appear as a silver flash to aircraft pilots.

6. Dense smoke fires.

7. Strobe light. Generally when night comes the search and rescue teams don’t fly at night. However, if someone knows you have a strobe light, they may be tempted to do a night search at 1000 feet elevation. The MPI (Metalized Products Incorporated) strobe light can be seen at 1000 feet and 3 miles away or further under clear conditions. The strobe retails for $20 and will run 72 hours on a single D cell.

8. Ground symbols. These symbols must be 30-50 feet long and 4 feet wide to be seen by aircraft. The following are the standard symbols and their meaning.

   - V requires assistance
   - X requires medical assistance
   - Y yes
   - N no
   - ↑ proceeding in this direction

   You can make a smoky fire at the apex of these symbols so they can be better seen.

**Foods**

Since you can survive weeks without food you must be very careful not to eat natural food sources that can make you sick or seriously ill.

1. Pinion nuts and pine needle tea will keep you alive indefinitely.

2. Insects are good except for hard-shelled beetles, centipedes, millipedes and scorpions.

3. Most bright, colorful insects (caterpillars) are poisonous.

4. Green leaf chewing insects must be cooked thoroughly as they have stomach parasites that will make you sick.

5. 95% of all white or yellow berries are poisonous.

6. 50% of all red berries are poisonous.

7. 85% of blue and black berries are non poisonous but do you know which 15% to avoid?

8. Mushrooms have no food value and many are deadly poisonous - avoid.

High Energy Trail Mix
1. Early bird granola
2. M&M’s
3. Nuts (salted or unsalted)
4. Sunflower or pumpkin seeds (shelled)
5. Miniature marshmallows
6. Dried apricots or dried banana chips
7. Raisins
8. Shredded coconut

If you mix this ahead of your trip, refrigerate because you have salts and oils combined.

**Medical Conditions to Avoid**

1. Hypothermia
2. Frostbite
3. Snow blindness

**Hypothermia**

Hypothermia is caused by the “CORE” body temperature dropping. When treating a hypothermia victim you must keep them away from direct heat and get their CORE (internal) body temperature up. Ways of doing this are by using a heating pad if available, warm blankets around the upper torso ONLY and if conscious have them drink hot sugar laced liquids.

**Note:** If you warm the extremities (limbs) first the individual could die from Re-warming Shock.

**Stages of Hypothermia:**

**Stage 1:** 98.6 to 96 degree Body Temperature. Intense shivering occurs as your body tries to raise body temperature. In the latter part of Stage 1 amnesia could occur.

**Stage 2:** 96 to 91 degrees. Shivering increases to a violent stage. Stumbling occurs, loss of control of limbs and speech and thinking and reasoning ability becomes sluggish.

**Stage 3:** 91 to 86 degrees. All shivering has stopped, oxygen is shut down to limbs. Your arms and legs will turn bluish in color plus loss of coordination causing the person to fall down a lot.

**Stage 4:** 86 to 78 degrees. Individual will fall down and not get up. Could go into a coma and look dead but in reality the individual is still alive.

**Stage 5:** 78 degrees and Below. Usually means cardiac arrest, however, if medical help is given immediately there have been cases, especially in young children where they have been brought back (even with a body temperature of 60 degrees).

**Hypothermia Self Treatment**

At temperatures of 55°F or less, you are in extreme danger if you get wet. At the first sign of hypothermia (or before) you must take immediate action while you are still able to care for
yourself. Do not try to hike out to your car or cabin, you may not even make 200 yards. Immediately ingest some high energy foods to provide your body with the energy to maintain your body temperature while you start a fire and dry your clothes. Drink hot liquids. Dark raw honey placed in black 35mm Kodak film cans (vinyl) provides an excellent quick energy source. Tape the covers on the cans well or you will have a mess. Dark raw honey has an indefinite life.

A poncho carried with you on field excursions will prevent you from getting wet in inclement weather.

A GI canteen cup is also handy to heat hot liquids (add honey to water) to aid in your recovery.

**Frostbite**

The best treatment for frostbite, if it is an option, is to keep the exposed area cold until you can get to trained medical personnel for approved treatment.

- Do not give alcohol or tobacco products to someone suffering from frostbite as it will slow down the circulation process.

- If you determine you have to treat (thaw) for frostbite under field conditions the best method is to immerse the limb into water that is constantly kept at a temperature between 102 to 106 degrees. You must not let the limb touch the bottom or sides of the water container and you must constantly agitate the water. Keep the limb immerse for a minimum of fifteen (15) minutes after you think it has completely thawed. Whatever you do, DO NOT break any blisters or blood sores. Once the limb is thawed wrap it lightly in soft cloth and elevate.

- The only other option is to allow the frostbite affected area to thaw slowly at room temperature.

  **Note:** As the limb thaws from the outside in it will cause the individual extreme pain and discomfort, but you must continue the process.

**Snow Blindness**

To prevent snow blindness adequate sun glasses are an absolute must. The best range of protection is a 19 to 30% transfer of light. Yellow shooting glasses should only be used in dull and hazy light conditions.

- **Treatment:** Snow Blindness will normally heal itself in a couple of days. Options are to use wet compresses, tea bags, cream from raw milk, or ground-up raw potatoes or cucumbers and apply to the eye lids as a compress.

- **Emergency Sunglasses:** Under emergency situations you have a couple of options:
  -- Use electrical tape to cover regular glasses leaving tiny eye slits.
  -- Use a piece of cloth folded enough to keep out light and cut tiny eye slits.
  -- As a last resort you can ring an Aspen Tree, approximately the diameter of head (the ringed area should be 4 to 6 inches high), cut and peel the ringed from the tree, cut a nose rest, tiny eye slits and use.

  **Note:** You should also use charcoal or camo paint under your eyes.
Lightning

Colorado is sixth (6th) in the nation for lightning related fatalities and second (2nd) in the nation for the number of strikes per square mile. (NE Colorado averages 200,000 strikes/year).

Lightning can strike at a distance of five (5) miles ahead of an approaching storm --- that’s the time to get below timberline -- off ridgelines -- or away from trees that extend above to a ridge line.

If you are in an area where you can see that lightning has struck a tree or trees --- move to another area.

One of the safest areas is along a ledge that is at least five (5) times higher than you. An area from the top of the ledge at an angle of 45 degrees to the ground is the same area to be in. Stay a body length away from the base of the ledge.

The worst time for Peak Lightning Strikes in Colorado is May 15th thru August 15th. The Safest time of the year is from August 15th thru the end of September.

Auto Survival

Stranded in your auto in a snow storm with a fuel tank of gas to keep warm wouldn’t seem to be a big problem. It is, however. Carbon monoxide can build up, even with the windows slightly vented, to pose a serious problem over a 24 hour period. A better solution to running your engine to keep warm would be to keep a sleeping bag in your car or carry an inexpensive stove that does not generate carbon monoxide. The following home made stove, built for about $5 will provide heat without generating carbon monoxide.

Take a 16 oz. coffee can and stuff one whole roll of one ply toilet paper into the can (axially). Remove the cardboard center so that this can be accomplished. Buy 6 pints of 70% isopropyl alcohol. Your stove will absorb one pint. Light the stove with a match. The alcohol will burn but the toilet paper won’t because it acts as a big candle wick. Make sure that you don’t get a larger isopropyl alcohol content (say 80%) mixture or the stove will burn with too high of a flame. Do not use denatured alcohol since it burns with no visible flame and you might forget that the stove is lit and you can get burned. When you light the stove, roll down the windows about 1-3 inches to allow the 30% water vapor to escape. When the interior is sufficiently warm, roll up the windows and blow out the flame to conserve fuel. Repeat this process as necessary. Six pints of fuel should last 24 hours in an average size car. By then the statistics indicate the storm will have subsided and you will be rescued by the highway patrol. Even though your car may be buried in snow, oxygen will still permeate through new fallen snow.
**Desert Survival**

The desert is the most difficult environment to survive in. You must have shelter from the sun and water to survive. You have only a 3 day life expectancy @ 120˚F with no water intake even if you do everything to conserve the body water that you have. You need 4 1/2 quarts of water to prolong your life expectancy 1/2 day. Never go into the desert without telling somebody about your trip, carry large water reserves and the basic equipment for shelter and building solar stills.

**Solar Still**

A solar still is a 3-4 foot diameter hole in the ground, with a collection container in the center, and the entire hole is covered by a 6x6 foot 3 mil mylar sheet. Place cut up vegetation, urine etc. in the hole. This “greenhouse” will vaporize the pure water from these materials, condense on the inside of the mylar and flow down the sides and drop into the collection container.

Each still will generate 1-3 qts of water per day so you need to build 4 stills. You must build these stills at dusk or night or you will lose more water that first day than the stills will provide. You need to use a flat Tupperware container as a collection device or it will melt. You also need to tape a 5 ft piece of surgical tubing (can’t melt under the heat environment) so the water can be extracted from the still. It takes 3 hours for a still to start producing so you can’t “open” the still to extract the water.

Use duct tape to reinforce the center of the mylar sheet so the rock doesn’t stretch or break through. Also create a small opening to add additional moisture (such as urine) to the still.

**Shelter and Other Considerations**

You must minimize your loss of body water. Wear light, cotton clothing, gloves and use sun screen to prevent being severely sunburned. Always wear sunglasses. Always have a good glass signal mirror and a whistle for signaling. Carry water purification tablets. Even if you are lucky and find a source of water in the desert it will be severely contaminated by the other wildlife that make that desert their home. Mechanical filters won’t be much help because they will rapidly get
clogged. Don’t try to walk out. Distances are very deceptive in the desert and you won’t make it. Stay put and hope that the search party finds you.

A shelter can be made using 4 large emergency blankets and 100 ft. of parachute cord. Make sure the silver reflecting surface is pointed away from you. This is just the opposite of what you would do in a cold environment. Tie the cord to whatever anchors you can find to create your shelter. Staying in your car is not a good idea because it will act as a greenhouse.
SURVIVAL KITS

BASIC SURVIVAL KIT:
- Flash Light
- GI Signaling Mirror
- Surveyors Tape
- Acme Thunderball Whistle
- Strobe Light
- Cyalum Light Sticks
- Compass
- GI Coffee Cup
- Plastic Bags 4 ea.
- 25’ Nylon Cord
- Dental Floss w/sewing needles
- Insect Repellent (Repel 100 w/Deet)
- Poncho
- Gators
- Duct Tape 1 roll
- Knife
- Waterproof Matches
- Cigarette Lighter
- Knife Sharpener
- Spare Clothes
  (Hat, Gloves, Socks, etc.)
- Leather Gloves
- Portable Fire Ring
- Pepper Spray
- 38 Can Opener

FIRE KIT:
- Safelite Sticks
- E-Z Starter Packs
- Carbide Crystals
- 0000 Steel Wool Pads 2 ea.
- 9V Battery or 2 ea. 1/2V Batteries
- Waterproof Matches
- Cigarette Lighter
- Magnesium Fire Starter

WATER PURIFICATION KIT:
- PUR Traveler Filter System
- 2% Tincture of Iodine
- Aqua Purification Tablets
- Chlorine Bleach
- 6’ x 6’ plastic 4 ea.
- 6’ Surgical Tube 4 ea.
- 6’ Surgical Tube (4 ea.)
- Water Bottle (2 ea. - 22 oz.)
- Tupperware container or Bowl

EMERGENCY FOOD:
- Dark Honey 2 ea. 35mm Cans
- Power Bars 4 ea.
- Chocolate Bars
- Hard Candy
- Tea Bags
- Instant Hot Chocolate Mix
- Vacuumed Packed Nuts or Trail Mix
- Vacuumed Packed Marshmallows

SHELTER KIT:
- Space Blanket (Gold/Silver) 2 ea.
- 50’ Nylon Cord
- Cold Weather Electric Tape (Scotch 38)
- Plastic Tarp (8’x10’ @ 3 to 5 mm thick)
- Sheath Knife (blade thru handle w/3 rivets)
- Folding Saw
- Folding GI or Avalanche Shovel

FISHING KIT:
- 50’ line
- # 8 Hooks 10 ea.
- 1” Bobber
- Lead Weight strips 10 ea.

FIRST AID KIT:
- Sun Block
- Band Aids
- Iodine
- Gauze
- Gauze Pads
- First Aid Cream
- Surgical Tape
- Carmex Lip Balm
- Folding Scissors
- Bactine
- Aspirin
- Snake Bite Kit
- Sun Glasses Folding Film Lens