



Wilderness Survival Basics

**LEARN TO BE PREPARED FOR:
AN UN-PLANNED OVERNIGHT
(OR MORE) IN NATURE.**

Goal of this class - To give you a FOUNDATION of Wilderness Survival... So, you will:

- Understand what to do in a survival situation, and in what order.
- Understand each priority in a Wilderness Survival Situation
- Be able to build a **COMPLETE** and organized survival kit with contents you are familiar with, comfortable with and know how to use.
- Understand how KNOWLEDGE, GEAR and SKILLS work together.

Each Topic Covered:

Could be a separate class itself, lasting days or even weeks.

This condensed program will lay the groundwork and certainly give you enough knowledge to survive an unplanned overnight in nature.

The Origin of this Program



Why Learn Wilderness Survival?

Because your “mindset ” can be the difference between being a “RESCUE” or being a “RECOVERY” in a survival situation.

Knowing what to do in a wilderness survival situation can help you minimize fear and panic - *Fear and panic are killers, they don't allow you to think clearly. You must minimize fear to think clearly. Walking around while in a panic can lead to serious injury!*

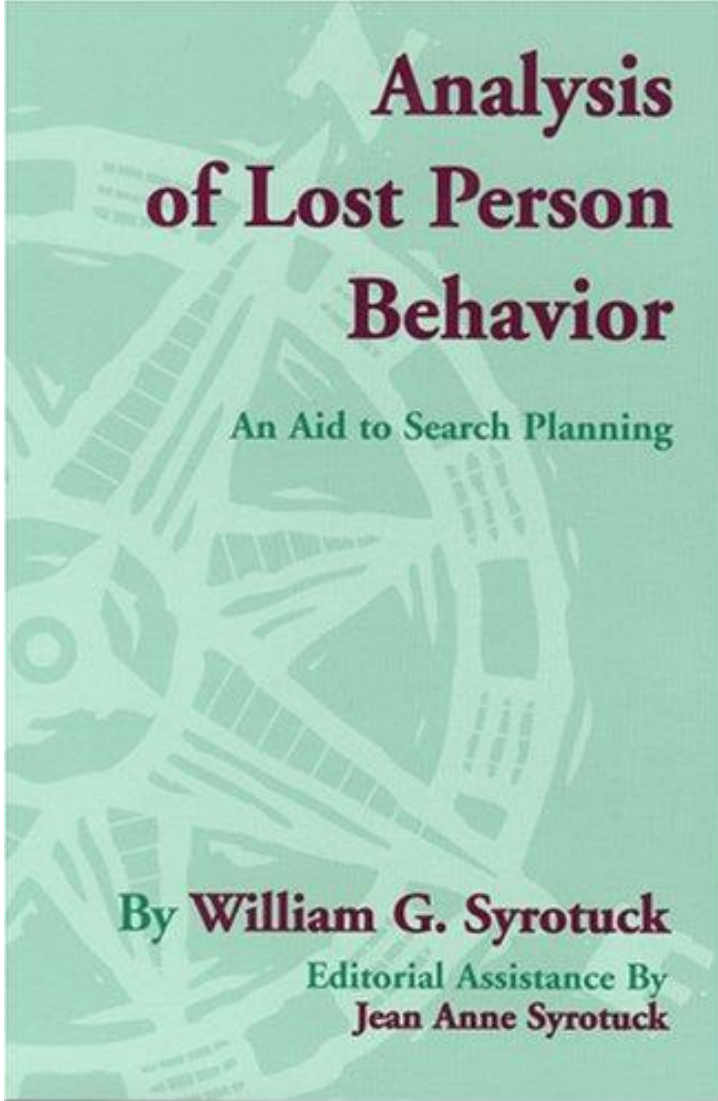
- Recognize and admit your situation - Know that a ***POSITIVE ATTITUDE***, along with your survival knowledge, skills and gear will get you through this situation.
- Keeping yourself busy and your mind occupied greatly reduces fear.



Avoid unnecessary risks!



**Every time Search & Rescue go out
on a rescue or recovery, they put
their lives at risk!**



Analysis of Lost Person Behavior

An Aid to Search Planning

By **William G. Syrotuck**

Editorial Assistance By
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A lost person, capable of going three miles in any direction, creates a search pattern covering up to 28 square miles (πr^2).

To cover an area this size thoroughly would take 264 searchers, searching for twelve days!

Question?

In a survival situation, what is the lightest thing you can carry with you that will give you the greatest odds of survival?

KNOWLEDGE

What circumstance(s) could get you into a survival situation?

Nationally - The top reasons SAR is called out (not in any order)

- 1) Trips
- 2) Falls
- 3) Sprained Ankle
- 4) Lost Hiker
- 5) Fatigue/ Physical Condition
- 6) Weather (Heat)
- 7) Gastro Intestinal Issues....
- 8) Drowning

93% of people are rescued within 24 hours!
And a total of 95% are rescued within 3 days.



Note: Search and Rescue recommend staying put, if safe to do so.
It can take them much longer to find you if are continually moving your location.

•Local - **WASHINGTON COUNTY**

Search and Rescue Information:

- 150 to 170 Calls per year:
- 50 are Heat Related, with 2 to 4 Heat Deaths Per Year.
- 20% are people stuck on hillsides that can't get down or back up.



A few wilderness survival recoveries / rescues

- >32yr old experienced hiker dies from exposure (hypothermia) in New Hampshire.
- >Grandfather and grandson die in Arizona during a hike.
- >62yr old hiker lost for 9-days in the Sierra National Forest.
- >78yr old hiker lost for 3 days in Baxter State Park.
- >Body of a missing hiker found after 3 weeks in Yosemite.
- >Multiple incidents of hikers and their pets dying on Arizona trails are primarily caused by extreme heat, dehydration, and hyperthermia!
- >Each year in Yosemite, SAR responds to 250 incidents / rescues!





• The biggest killers in the wilderness:

- Drowning
- Catastrophic Falls
- Exposure (inability to regulate your body temperature)
 - Hypothermia or Hyperthermia-

Hiking can be more dangerous than backpacking, because when backpacking....

- *You are carrying items to help thermoregulate as well as water filtration and food.*
- *Hikers sometimes go without these items and can get into trouble.*



•Primitive Skills Vs. Modern Methods for Wilderness Survival

•Primitive Skills:

- Requires knowledge and practice that will allow you to live off the land.
- Can become a hobby or even a lifestyle for some people.
- Requires a great degree of knowledge and practice of the skills, some being:
 - Fire by Friction.
 - Construction of primitive shelters.
 - Tracking & trapping methods, and hunting with primitive weapons.
 - Uses of natural resources (plants and such) for food, medicine and utility.

•**Note:** Just because you know primitive skills does not mean you should depend on them.

• Modern methods and gear, greatly improve your chances of survival.

- **Modern Wilderness Survival - OUR PRIMARY FOCUS!**

- Basic knowledge and minimal practice needed, using modern gear that can be purchased at most outdoor stores to address your priorities in a survival situation.
- This is for the average hiker / backpacker / birder / naturalist, that wants to learn to survive if lost or injured on a wilderness outing.
- This knowledge you gain could save your life in a wilderness survival situation!



My approach to teaching Wilderness Survival:

Survival Gear Lists

Vs

Concepts

(in this case “the Priorities of Survival”)

will lead to proper gear selection for you based on your level of skill and knowledge

If you give a man a fire.....



Trip Preparation

- Be Prepared (Scout Motto)
 - **Tell someone where you are going and when you plan to return.**
(when can that system fail?)
- Clothing Selection (first line of defense against the elements):
 - Know how to use the “layering” system.
 - Cotton doesn’t kill....Stupidity kills!
- Gear Selection (*all gear should be tested out prior to your trip*)
 - *If you can, buy 2, one to practice with and one for your kit.*
- Know the area (familiarize yourself with the map of the area)
 - Route Plan (know the terrain and any possible hazards)
 - Forecasted weather for your trip
 - Resources - Water / Plants / Animals

The Actual Trip

- Pay Attention to:
 - Weather Changes / Terrain / Hazards / Landmarks / Plants / Animals
 - Look back on occasion to see what the trail will look like on the return trip



If you think you are LOST

S•T•O•P

- **S**it Down - Don't keep walking (because you can't walk in a straight line) Physically stop, sit down and let yourself calm down. Walking around in a panic can lead to injuries. Remember about panic and fears being killers. Eat a snack, breathe deeply, try to relax (because you know what to do).
- **T**hink - Are there any immediate dangers? Life threatening injuries? Once calm, you may be able to remember your route and how to get back. Visualize your journey and landmarks you have passed.
- **O**bserve - Your surroundings and relate them to your map. You may notice a feature you recognize and use that feature to help you navigate back.
- **P**lan - What are your options? What do you have with you, what natural resources are available to you? Should you use navigation techniques to continue onward, or backtrack to a known location, or should you make yourself comfortable and wait for rescue?

What are the priorities in a Wilderness Survival Situation?

What are “The rule of 3’s”

The Rule of 3’s state: You can live.....

3-Seconds without “Hope” (PMA – A Positive Mental Attitude)

3-Minutes without “Air” (Bodily Function - Blood Loss - Airway Compromise – Heart Issues)

3-Hours without “Shelter” (Thermoregulation – Keep your body core temperature at 98.6°)

3-Days without “Water” (Less in a Desert Survival Situation)

3-Weeks without “Food” (a very low priority)

My Additions to the Rule of 3's and where they fit into the priorities:

3-Seconds without “Hope” (PMA – A Positive Mental Attitude)

3-Minutes without “Air” (Bodily Function - Blood Loss - Airway compromise)

3-Hours without “Shelter” (Thermoregulation – Warmth / Shade – 98.6° Core Temp)

>Signaling & Communication (get signals ready so you can signal to rescue personnel)

>Sleep (sleep deprivation can greatly affect decision making abilities), an often overlooked priority

3-Days without “Water” (Less in a Desert Survival Situation)

>Navigation (If no one is searching for you, it may be time to try to navigate out of your situation)

3-Weeks without “Food” (a very low priority)

Your Survival Kit should be built based on the priorities listed above

- Build your survival kit on the priorities listed above.
- Using the “Priorities of Survival”(rule of 3’s + 3) will assure a complete kit with components you are familiar with as opposed to working off a gear list created by someone else.
- Adding in the items listed in ”10 essentials” will complete your kit.
Note: most of the “10 essentials” are already covered by
“The Rule of 3’s”

More on “the 10 essentials” later.....



Our environments change, however, our needs don't!

The priorities are the same in all environments, although the approach to addressing the priorities may be different, shelter for example.....

Jungle (raised bed) / Arctic (snow cave)



3 Seconds without “Hope”

PMA - Positive Mental Attitude

- The correct mindset can be the difference between being a “rescue” vs. becoming a “recovery”.

Having a positive mental attitude is why some people, with absolutely no survival training, have lasted for several days in a survival situation and have been successfully rescued .On the other hand, while we have no definite way to know, some that have perished, had the skill and knowledge to live, but did not. This could have been due to their mindset. Possibly, they did not have the positive attitude and hope needed to get them through the situation.....they just gave up!

A survey of over 120 Naked and Afraid applicants found that 100% put “PMA” as their number one priority in a survival situation!

- Carry what you need to give you the hope, the “PMA” to get through your situation.
 - Confidence, determination and the will to get through the situation.
 - Family photo
 - Bible verses
 - Survival information cards

3 Minutes without “Air” Bodily Functions - First Aid & Safety



In Wilderness First Aid, we use the MARCH Algorithm to assess life threats:

M - Massive Hemorrhage (control life threatening bleeding)

A - Airway (make sure the victim has a patent airway - no blockages or swelling)

R - Respiratory (assist with respirations if needed)

C - Circulation (CPR if the victim is in cardiac arrest)

H - Hike out / Helicopter rescue / Hypothermia (control body temperature for shock victims)

What are the signs and symptoms of conditions you should really be aware of?

(Things like burns are visually seen, the items below, you need to be able to access)

- 1) Hypothermia
- 2) Hyperthermia
- 3) Dehydration
- 4) Hyponatremia
- 5) Heart Attack / Cardiac Arrest (they are not the same thing)
- 6) Shock
- 7) Anaphylaxis
- 8) HAPE (if going to altitude)
- 9) HACE (if going to altitude)
- 10) Spinal Injuries

**3 Hours without “Shelter”
Thermoregulation
Keeping your body core at 98.6°
Shelter & Fire**

Thermoregulation Overview:

- With ambient temperatures roughly around 75° to 85°, nothing is needed to regulate body temperature. Outside this range, additional steps are needed to warm or cool our bodies such as clothing, shelter, shade and fire in order to avoid:
 - **Hypothermia** (too cold.....body core temperature (below 95°)
 - **Hyperthermia** (too hot.....body core temperature (above 104°)

Keeping your body core temperature at 98.6°. If your body temperature is much higher or lower for an extended period of time, it could kill you. Exposure is the #1 Killer in Wilderness Survival Situations.

It is easier to maintain than raise or lower body core temperature!

How do we deal with Hypothermia and Hyperthermia

- 1) Shelter (including shading-up on hot, sunny days).
- 2) Fire (in addition to shelter for Hypothermia)*

*sometimes due to weather and location, fire may not be an option.....



Heat Loss Mechanisms

How is heat lost from your body and what can you do about it?

- **Conduction** - Direct transfer of heat from a warmer object to a cooler object. Heat travels from hot to cold.
 - Arctic - You are warmer than the ambient cooler air. The colder environment is absorbing your body heat, so *you* get cold!
 - Desert - Your cooler body is absorbing heat from the ambient warmer air, so you get hot!
- **Convection** - Movement of cooler air displacing the warm air next to your skin. Given the same temperature, you always feel colder when there is a breeze.
- **Radiation** - Radiative heat loss from your body. Electromagnetic waves from the body to cooler surrounding surfaces, or just out into space.
- **Evaporation** – Your body dissipates heat to turn sweat from a liquid to a gas. *This is the body's cooling mechanism.*
- **Respiration** - Warm moist air in our lungs exchange with the cooler dryer outside air.

- What are the signs of “Hypothermia”? (Blood is leaving your extremities moving to protect your core)
 - Shivering is your body’s effort to generate heat (early stages).
 - The “Umables”:
 - Fumbles - loss of fine motor skills (hard to work buttons or zippers)
 - Stumbles – abnormal walking pattern
 - Mumbles – slurred speech
 - Grumbles – an “I don’t care attitude”, depressed, abnormal behavior

Test for “Hypothermia”

- 1) Touch your thumb to each finger on your hand individually.
- 2) Walk a straight line.



- Treatment for “Hypothermia”

- 1) Warm your body using.....Shelter and Especially Fire (if safe to do so)!

- 2) Get out of any wet clothing - Replace with dry clothing

- 3) Re-warm in a sleeping bag (with another person if necessary)

- 4) Warm Fluids if the person is able to drink



IMPORTANT

As you become hypothermic, your body will start taking blood from your extremities to keep your core warm.

This will cause you to lose fine motor control in your hands.

This will make it difficult if not impossible to do simple things like build your shelter or build a fire.

So, in a sense, hypothermia will kill you long before you die since you will not be able to help yourself if you are alone.

Forget about things like making natural cordage if you don't have fine motor control!

HEAT RELATED ISSUES AND EMERGENCIES



DEHYDRATION:

Impairs the body's ability to regulate Core Temperature, so it makes Heat Illness more likely!

-You lose the ability to sweat effectively.
Sweat is the body's cooling mechanism.

-Blood volume is lower (less fluid in the body).
So, your heart needs to work harder to pump blood – Increase in HR

-Vital organs (brain, heart & lungs) compete with muscles for oxygen rich blood.
Muscles lose out, which can cause muscle fatigue.

-Less blood to the brain causes dizziness.



Indications of DEHYDRATION:

-Thirst:

Is triggered by an increase of blood concentration (lower volume).
There is a "Lag Time", so thirst is not always reliable!

-Urine Color:

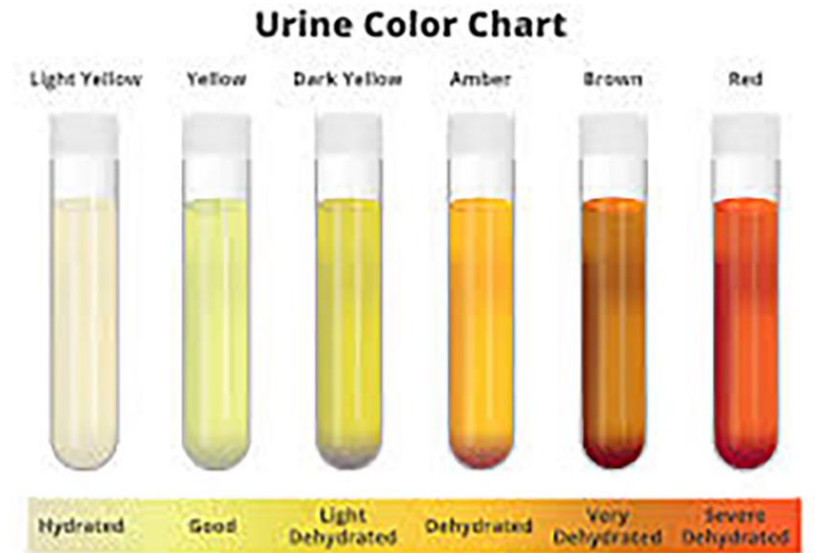
A better indicator, however, still not 100% reliable.....
There is a "Lag Time"
Certain medications, vitamins and supplements can throw off the color.
Urine should be a very light yellow, not dark, not clear.

-How to encourage Hydration:

Cold Beverages / Flavored Beverages / Salty Snacks.

-During the Activity:

Stay Hydrated!



Do not “Chug” water directly before activity:

-Overdrinking:

Stimulates Urine Output

Can cause Abdominal Pain

Can cause Hyponatremia (low blood sodium)



Heat Illnesses (Hyperthermia)

- How is body heat gained?
 - Vigorous activity in warm to hot weather.
 - Overdressing in hot weather.
 - Slow rise in body temperature from being in hot weather.
- Heat Cramps
 - Heat Cramps: (muscle cramps, normally in the abdomen and legs)
 - Usually due to electrolyte loss through sweating and not replenishing fluids and electrolytes during the activity.
- Treatment for Heat Cramps:
 - Move to a cooler place
 - Drink fluids with electrolytes
 - Stretching and Massaging the affected muscles

Once symptoms have resolved, you are good to continue the activity

Heat Illnesses (Continued)

- Heat Syncope (Fainting)
 - Blood pooling in legs from prolonged standing (less blood in the brain)
 - Shunting of blood to the skin to aid in cooling the body (less blood in the brain)
- Treatment for Heat Syncope:
 - Move to a cooler place
 - Lay the person flat with legs elevated
 - Cool with misting water or wet, cool towels
 - Re-Hydrate once the person is conscious

This should be a very short fainting spell, seek medical attention if otherwise.
Elderly persons should be evaluated by a medical professional.

Heat Illnesses (Continued)

- Heat Exhaustion (core temperatures up to 104°)
- Signs and Symptoms:
 - **Rapid, weak pulse** - Due to blood vessels dilating to send blood to the skin to aid in cooling.
 - **Dizziness** – Blood leaving the brain to go to the skin to aid in cooling.
 - **Headache** – Dehydration reduces blood volume in the brain.
 - **Nausea** – Blood leaving the digestive system to go to the skin to aid in cooling.
- Treatment:
 - Move to a cooler place out of the sun
 - Remove excessive clothing
 - Cool the person with cold compresses or ice packs (sides of neck, armpits, groin)

Heat Illnesses (Continued)

- Heat Stroke (A Medical Emergency!) (This person needs Medical Attention – Evacuate!)
- Signs and Symptoms:
 - Confusion (Altered Mental Status)
 - Weakness
 - Dizziness
 - Headache
 - Unconscious
 - Seizures
 - Dry or WET skin (Activity induced Heat Stroke will often see moist skin)
- Treatment:
 - Move to a cooler place in the shade. Or...create your own shade.
 - Remove excessive clothing
 - Supervised Cold Water immersion up to the shoulders
 - Cold, Wet sheets (if unable to do water immersion)
 - Apply Cold Water (if unable to do water immersion)
 - Fluids, if awake and able to swallow (this is a minimal help)

Fire - Modern Methods

- Fire Safety.
 - Weather conditions (strong winds)
 - Fire containment (fire ring)
 - Never leave a fire unattended
 - Know how to properly put out a fire until is it “Cold Out”
- Fire Prep
 - Ember / Spark* based fire starting vs. Open flame fire starting
 - *Ember & Spark based fire making will need a Tinder Bundle
 - Tinder - Natural or Man Made (at least 2x what you think you need)
 - Base of the fire, allow oxygen under and into the fire
 - Kindling Size Steps- Pencil Lead / Pencil / Thumb (at least 2x what you think)
 - Fuel - Wrist size and larger
 - Natural materials - Fatwood / Birch Bark / Pine Pitch
 - Man made materials - PJ Cotton Balls / Commercially made fire starters
- How to know if the (dead & down) branches are good for fire making.
 - You will hear and feel a good “snap” when you break them.
 - Try to collect from lower dead branches that are still attached.



• Be sure to have 3 methods of making fire on you or in your pack

• Types of Fire Making:

- Solar - Fresnel Lens / Reflector

- Electrical - Battery & Steel Wool

- Open Flame

- Matches*

- Lighters*

- Spark Generators

- Firesteel (Ferro Rod)*

- Flint & Steel (not a ferro rod, over 3,000 year old method)

- Friction - Hand Drill or Bow & Drill

- Chemical - Potassium Permanganate & Glycerin / Chlorine & Brake Fluid

- Compression - Fire Piston

*My preferred emergency fire making items to carry.



Shelter

Shelter regulates the “Flow” (Heat Transfer) between you and the environment.

- **Clothing** - *It's your first line of defense* - Dead air space - Close up collars and cuffs so warmed air (warmed by your body) does not escape (bellowing effect). Cover exposed skin, especially your head and insulate yourself from the ground (if trying to warm up).

Learn how to properly layer your clothing for outdoor activities.

Shelter Question - Ask yourself these questions prior to making a shelter.

- 1) Do you need to warm up or do you need to cool down
- 2) What resources are available

Shelter

Should be a “System” you can mix and match!

You need:

- Something to sleep on...Insulation if the ground is cold, or just for comfort if warm.
- Something to sleep in...A sleeping bag, bread bag, poncho, trash bag, emergency bivy, tube tent (used as a bivy).
- Something to sleep under...Tent, tarp, tube tent.

Personal Emergency Shelters (on body shelters)

- Emergency Mylar Blanket (can also be used as emergency sunglasses)
You lose the use of your hands because you need to hold it in place.
- SOL Emergency Mylar Blanket (a tougher version of the basic mylar blanket). *You still lose use of your hands.*
- Emergency Bivy (good if you are just laying down in one place)
- Emergency Poncho by SOL (best choice because you now have use of your hands for shelter building or fire making)
(combine with a large plastic bag or a bivy bag or a tube tent)

- Trash Bag (55gal 3mil Contractor Bag) *Uses of a trash bag:*
 - **Emergency Waterproof / Windproof Poncho**
 - **Used to transport leaves to build natural shelters.**
 - **Water Carrier / Water Catcher**
 - **As a Tube Tent (two taped together)**
 - **Flotation device (Fill with air when crossing a body of water)**
 - **Insulation below or above (Sleeping Pad or Blanket)**
 - **Fill with leaves for a debris hut plug (Door)**
 - **Snow Melter (Dark color bags)**
 - **As a tarp or lean-too (two taped together)**

- Bread Rack Bags - Plastic bags used to cover bread bins in bakeries. (Larger and lighter than the contractor bags) .I have gotten these for free from my local supermarket. – (Same uses as a 55gal Contractor Bag, however, being clear, you can use as it as a transpiration bag to make water) – I carry both these and a 55gal Contractor Bag.

- Military type poncho – Can be a Personal Shelter (rain/wind protection) or set up as a tarp for cover (something to sleep under).



Shelters for Cover

First day, get your basic shelter together, then day 2 and forward, continue to improve your shelter.

- Trash Bags (55gal Contractor Bag) - Tape two together as a tarp, lean-to, or tube tent
- Bread Rack Bags - Same uses as the trash bag above.
- Painters Tarp Shelter - “A” Frame tent or Lean-to.
- Grabber or Arcturus Heavy Duty Survival Blanket...Several Set-up methods:
 - Cold weather Set-up with a fire (lean-to with an awning) (ridgeline)
 - Cold weather Set-up no fire (“A” frame) (ridgeline)
 - Hot weather Set-up (reflective side up) (ridgeline)
 - Plow Style Set-up w/tree (no ridgeline needed)
 - Lean-to using toggles on the ridge line

Note: For survival, get a color that will contrast with the environment.

- Military Poncho Shelter (set up as a tarp using some of the above methods)

Continued



The Heat Reflective Mylar Tube Tent

A VERSATILE SHELTER THAT CAN BE AN EMERGENCY TENT OR USED AS A BIVY BAG.



Think about the environment you will be in
to determine what shelter items to carry for emergencies.
Some examples below. Mix and match for your likes and needs:

Hot days, warm nights:

- A tarp for improvised shade if you get too warm and need to cool off during the day. Wind break at night.
- A trash bag. You may not need insulation from the cold ground, but a bag filled with leaves will be more comfortable to sleep on.

Hot days, cool nights:

- A tarp for the same reasons above.
- A mylar poncho for the cool nights
- A trash bag or bread bin bag for both insulation from the cold ground and comfort.

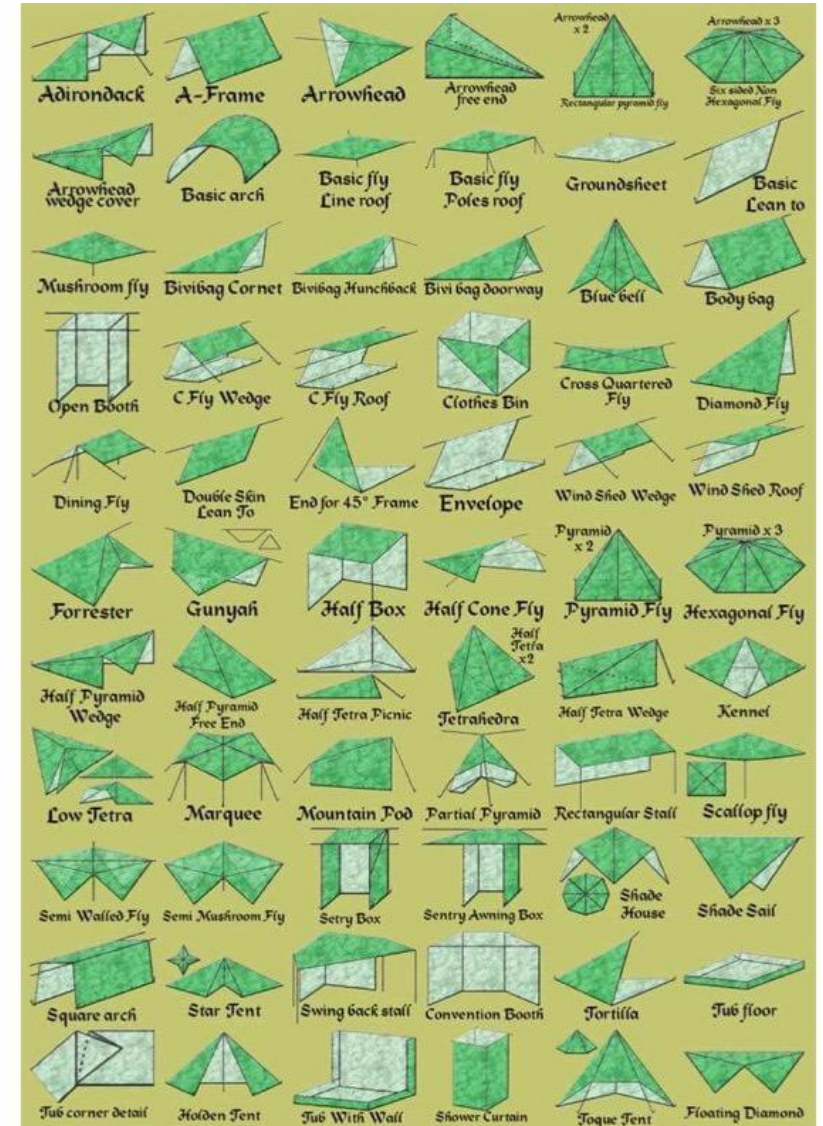
Cold days, cold nights:

- A tarp for cover - ideal if you are going to make a fire to keep warm.
- A tube tent - ideal emergency shelter if you are not going to have a fire.
- A mylar poncho for the cold nights (upper body) / Trash or Bread Bin bag (for your lower body)
- A trash bag or bread bin bag for both insulation from the cold ground and comfort.

- 10x10 Free Standing Tarp (W/Hiking pole)
 - Can be used in the same configurations as the Grabber space blanket tarp.
 - Modify so tarp ends can be used as doors
 - Can be used in the “plow” configuration if there are strong winds.
 - Second ridge line through tabs for wind protection
 - End tabs attached to ridge line with sticks by pulling ridge line through tabs
 - Free standing setup with trekking pole
 - Many configurations limited only by your imagination.
- Super Shelter
- Natural Shelters
 - Rock overhangs, large downed trees, caves and alike.
- Debris Shelter - **Can take several hours to build**
- Raised Shelters - More appropriate in the jungle
- Cold Weather Shelters (Igloo, Snow Cave, Quinzee, Tree Pit)

Squirrel Up:

Wiggle into a leaf/debris pile, only your face sticking out to breathe.



Shelter & Shelter Location Concerns:

- Insulate yourself from the cold ground (sleeping pad / Trash or Bread Bin bag filled with leaf litter)
- **Avoid**: widow makers / game trails / dry creek beds / potential flood areas / windy peaks / cold valley floors / tops of hills / valleys / dead trees / windward side of a hill / below a rocky outcrop / areas with fresh animal sign
- **Look for**: flat ground / windward side of a valley / leeward side of woodland / 50-100 yards away from water / good drainage.

- A South facing shelter will maximize your sun exposure and keep you warmer
- A North facing exposure will minimize sun exposure and keep you cooler.

- **Try not to move your camp!** - Often times, SAR will find your first camp then a day or two later find your second camp, and so on...

You significantly improve your chances of faster rescue by not moving camps.

Signaling for Rescue

**Not part of the
Rule of 3's**

This priority is best approached parallel to the Shelter / Thermoregulation priority. Once you have addressed the critical First Aid issues. Be ready to signal for help as you work on your shelter and fire.



- Types of Signaling

- Audio
- Visual
- Electronic

- Universal Distress

- SOS - 3 blasts on a whistle - (SAR will respond with 2-Blasts)
- Whistle should be a “Plastic / Pealess” type
- Things arranged in a Triangle
- 3 of anything - 3 fires in a row

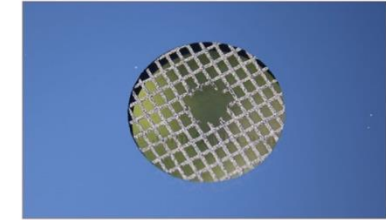


Ground to Air Signaling (a whistle won't work)

- Who are we signaling to - Small airplanes and helicopters (not commercial aircraft)
- Signal Mirror
- Signal mirrors with “Retro-Reflective” grids are recommended as the most accurate for signaling for rescue. A mesh screen coated with spherical beads work like a street sign that reflects the light from your car back toward you.
- You see a glow (a representation of the sun) on the grid - That’s your aiming indicator.
- Flare
- Smoke Grenade
- 3-Fires arranged in a triangle or in a row
- Signal fire (works ground to ground as well)
- Burn rubber in a snowy white environment to create black smoke
- Burn leaves in a dark wooded environment to create white smoke
- Uses of natural materials like rocks laid out in an arrow or triangle that does not look like part of the natural environment (Contrast)
- Flashlight / Headlamp (one that blinks is best)
- High Visibility Clothing

Signal Mirror Basics

Retro Reflective Grids



A mesh screen coated with spherical beads, works like a street sign that reflects the lights of your car back toward you.



You see a “glow” (a representation of the sun) on the grid. That is your aiming indicator.



Recommended signal mirrors with retro reflective grids

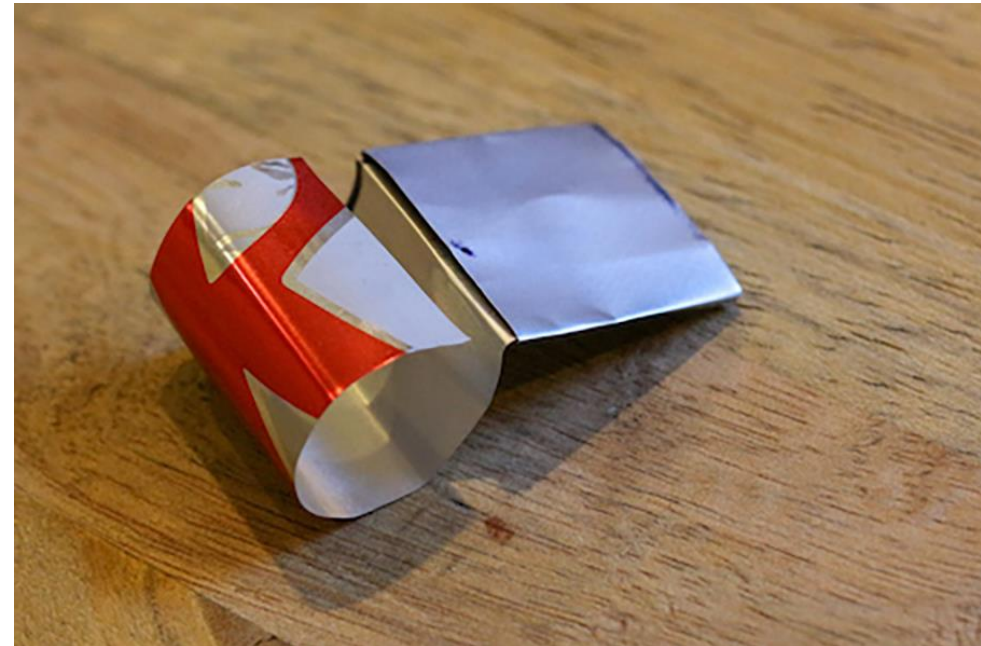


Signal mirrors without retro reflective grids

Ground to Ground

Who are we signaling to - SAR / Hikers passing by.

- Signal Mirrors
- Whistles - (Man made / Aluminum Soda Can / Leaf / Grass / Acorn Cap)
- Flagging Tape (can also be used as a “Breadcrumb” trail if you need to leave base)
- Smoke Grenade
- Flashlight / Headlamp (one that blinks is best)
- High Visibility Clothing



A brightly colored synthetic shirt (to contrast with the environment) can help with visibility, and help SAR find you!



Color – Bright Pink, Yellow or Blue will usually contrast with the environment.

Why Synthetic? – If you are hiking on a warm day and choose to wear a cotton shirt to aid in cooling you via evaporative heat loss, the cotton shirt may remain wet and cause hypothermia if the night cools off.

- Electronic (Besides the obvious cell phone)
- PLB (Personal Locator Beacon.....Some devices allow two-way communication, while others are one way SOS only.

- Spot - Globalstar - 48 Mini Satellites - Purchase device & Subscription (2-way com)
- In Reach - Iridium - 77 Satellites - Purchase device & Subscription (2-way com)
- Zoleo - Iridium - 77 Satellites - Purchase device & Subscription (2-way com)
- ACR - Sarsat - 70 Satellites - Purchase device no subscription - (SOS only)



Can you use a smartphone for emergency signaling?

Newer smartphones can connect to satellites

- Not as rugged as dedicated PLB's (personal locator beacons)
- Coverage is limited to supported countries
- Battery life of a smart phone is considerably less
- Not waterproof
- Needs to be pointed to the satellite
- No automatic "breadcrumb" tracking

- No additional cost using a smartphone
- Personal Locator Beacons need a monthly subscription plan



Can you use a smartphone for emergency signaling?

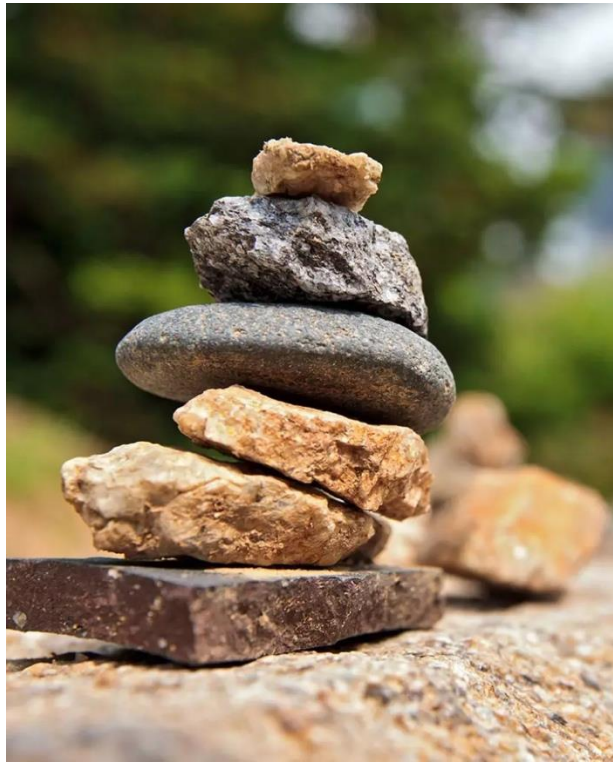
Newer smartphones can connect to satellites

- Not as rugged as dedicated PLB's (personal locator beacons)
- Coverage is limited to supported countries
- Battery life of a smart phone is considerably less than a PLB
- Not waterproof
- Needs to be pointed to the satellite
- No automatic "breadcrumb" tracking

- No additional cost using a smartphone
- Personal Locator Beacons need a monthly subscription plan.



Newer Apple Watches can connect to Satellites for emergency signaling as well.



- Signaling to SAR aircraft in an open field - It could take several hours for “boots on the ground” rescue personnel to arrive - your shelter could be far from the open field where you signaled to the aircraft.

Leave a “Breadcrumb” trail so SAR can locate you:

- Rock Cairns
- Ground Markings that contrast with the ground surface
- Flagging Tape (super lightweight and easy to put into a survival kit)

Sleep

Not part of the Rule of 3's

• This priority is addressed via your “Thermoregulation” priority. While it may seem sleep is not a necessity in a wilderness survival situation, it can be vital. Sleep deprivation can cause you to make bad decisions. Not sleeping the first night may not be much of an issue, however two nights of sleep deprivation can start to cause issues that may make your attempt at survival much more difficult. Lack of sleep causes:

- Confusion & Memory issues
- Hallucinations
- Headaches
- Blood Pressure issues
- Irritability
- **General bad decision making**



3 Days without “Water”

**Less time in a very dry
or hot environment**

How much water should you carry?

- Time of year
- Water availability on your route of travel
- Your ability to carry the weight - water weighs 2.2 pounds per liter (which equals appx 34 ounces).
- A 3-liter water bladder weighs 6.6 pounds (excluding bladder)

- What types of water containers to carry?




- A metal water bottle or metal cup allows you to boil water.
- Inexpensive disposable water bottles usually can accommodate a “Sawyer” type filters, as well as allowing you to use the SODIS method (see below)
- You can boil water with hot rocks in a yucca stalk. (you will need fire)
- You can boil water in a plastic bag with hot rocks. (you will need fire)

- Methods of making water safe to drink:
Filtration / Disinfection / Purification

- Straw Types / Squeeze Types (sawyer / befree / Grayl) / pump types
- Chemical - (Iodine / Chlorine / Chlorine Dioxide) (Chlorine Dioxide is best)
- Boiling
- SODIS method - Using PET bottles (polyethylene terephthalate) in direct sunlight for 6 hours which pasteurizes the water.

Water treatment while hiking, camping, and traveling

When visiting places with unknown water quality, treat water to make sure it's safe to drink. **Boiling water is the most reliable way to kill germs.** If you cannot boil your water, the next best option is to use a filter (especially if water is cloudy) and then use another treatment method. Follow instructions on the treatment product's label, including the contact time for disinfectants. This guide can help you decide which treatment method or combination of methods to use to make your water safe to drink.

								
TYPE OF GERM	BOIL (for 1 min., or 3 mins. at elevations above 6,500 feet)	FILTER	PURIFIER	CHLORINE TREATMENT (disinfectant)	IODINE (disinfectant)	CHLORINE DIOXIDE (disinfectant)	COMBINING FILTER AND DISINFECTANT	UV LIGHT USED IN CLEAR WATER
BACTERIA (such as <i>Campylobacter</i> , <i>Salmonella</i> , <i>Shigella</i> , <i>E. coli</i>)	✓	✓ 0.3 micron or smaller filter	✓	✓	✓	✓	✓ 0.3 micron or smaller filter, plus disinfectant	✓
VIRUSES (such as norovirus, hepatitis A, enterovirus, rotavirus)	✓	✗	✓	✓	✓	✓	✓	✓
PARASITE <i>Giardia</i>	✓	✓ Filter certified for "cyst" and "oocyst" reduction	✓	!	!	✓	✓ Filter certified for "cyst" and "oocyst" reduction, plus chlorine dioxide	✓
PARASITE <i>Cryptosporidium</i>	✓	✓ Filter certified for "cyst" and "oocyst" reduction	✓	✗	✗	!	✓ Filter certified for "cyst" and "oocyst" reduction, plus chlorine dioxide	✓



Centers for Disease Control and Prevention
National Center for Emerging and Zoonotic Infectious Diseases

Learn more: www.cdc.gov/healthywater/drinking/travel/backcountry_water_treatment.html

- ✓ **EFFECTIVE**—will remove or kill this type of germ
- ! **SOMEWHAT EFFECTIVE**—may remove some germs of this type, but water could still be unsafe
- ✗ **NOT EFFECTIVE**—will not remove or kill this type of germ

Natural Sources of Water in an emergency.

- **Sea Water** - Too much salt in the water, it can kill you, however if you are stranded at sea sip in very small amounts (no more than 32oz a day), it could possibly save your life, but you will not be healthy when rescued!
- **Sea Water** - Distillation will make it safe to drink.
- **Snow / Ice / Rain....** Melt and filter before drinking. Pollutants are picked up from the air and should be filtered out if possible. Use your tarp to collect rain water.
- **Solar Still** - Add Vegetation / Urine / Sea Water - Hard work with little return.
- **Morning Dew** - Tie bandanas to your legs walk through safe vegetation (no poison Oak or other unsafe plants) then wring bandanas out into a bottle.
- **Transpiration Still** (clear plastic bag tied to a leafy tree branch).



How to find water sources

- Climb to a high spot and have a look around for water sources.
 - Notice possible bodies of water: Streams, Lakes, Rivers, Ice, Snow
 - Look for riparian trees and vegetation (the emerald green trees)
 - Go down hill - water flows down so you may find water by going down, however, it sometimes exits via rock seep crevices prior to flowing all the way down.
 - Watch the animals - most go to a water source at least once daily. Birds fly low on the way to a water source.

What other resources have you found when you have found a water source?

- Plants - Edible & Medicinal plants / plants and trees to use for friction fire, shelter & weapons.
- Animals (animals can be a food source)
- **Ration your sweat** - In the desert, travel early morning & twilight. Shade up and rest during the heat of the day.
- **Ration your water** - Two schools of thought:
 - 1) *Never ration water* - it's better to have it in your body than in your backpack.
 - 2) *Ration your water* - Your body can only absorb appx .7 quart per hour, so drinking more than that is just waste.

KEEP FILTERS FROM FREEZING



Navigation

Not part of the Rule of 3's

- You may need to attempt to navigate your way out of your situation (assuming you are able to walk out), because:
 - You never told anyone where you were going and when you plan to return. OR
 - You got lost prior to your “overdue” date (if you did leave a plan with someone). OR
 - You changed your route prior to getting lost, so you are lost off the planned route you left with someone.

- **This priority is best addressed** after you have accomplished all the other priorities (with the exception of food).
 - This will allow you to:
 - Have a shelter to return to if your first attempt to find your way out is not successful.
 - Have signaling methods in place to use as needed
 - Have a good supply of water with you

- You should have a compass and map (with knowledge of their use) in your pack or survival kit.
- If not, there are emergency & natural methods of navigation.
 - Shadow Stick Method - Shown below.
 - Natural Navigation: Spider Webs / Tree Roots / Using the Sun / Various other methods of Natural Navigation



Which way are we facing?



Mid-Winter, early morning frost.

3 Weeks without “Food”

A very low priority in a Wilderness Survival Situation

- **Carry extra food in your pack** - Something you may not normally want to eat so you don't eat it, unless it's an emergency.
 - Chia seeds are a lightweight power packed food.
 - Jerky / Food Bars / Nuts
 - Pemmanican - Has a long shelf life
 - Learn the edible plants in your area
- **Hunting Methods**
(The knowledge and ability to produce these items in the field)
 - Deadfall Traps
 - Fishing (carry a small kit with line, sinkers and hooks)
 - Snares with wire or cordage
 - Primitive Archery / Atlatl / Rabbit Stick
 - Other Primitive methods such as Bolo, Sling....et



Figure 4 Deadfall Trap

Survival Kits

- **On a short day hike**, your “survival” items can easily be carried, along with your other hiking gear, and the 10 essentials (covered later), in a small backpack. Since it’s a small day-hike pack, there would be little reason that you would be separated from your pack.
- **On backpacking trips**, having a separate “survival” kit, that may also include some of the 10 essentials would be a good idea for those times when you venture away from your larger backpack. Heading away from camp for a walk, or heading off trail to use the bathroom would be good examples of when you might not want to carry the larger backpack around.

NOTE: one person actually perished while going off trail to use the bathroom and became lost, not able to find their way back to the trail. A simple whistle to call for help could have possibly saved this person.

Another example might be a fast-moving wildfire where you want your survival gear but may need to move quickly and don’t want a heavy pack on your back.

Putting a small survival kit into a dry bag is ideal for this type of situation where you want a separate survival kit.

Rule of 3's Survival Kit

- **3 Seconds Without Hope:** (PMA Positive Mental Attitude):
 - Family Photo, Scripture Verse, etc
- **3 Minutes Without Air:** (Bodily Functions / Safety):
 - First Aid Kit (deal with life-threatening injuries first) / 3-Days of Rx Medications (72 hrs is standard rescue)
- **3 Hours Without Shelter:** (Thermoregulation – Shelter & Fire):
 - Reflective Poncho / Tarp or Poncho Tarp & Line Kit / Large Trash Bags / High-Density Clear Bags / Emergency Tube Tent / Extra Cordage / Lighter / Matches / Fire Steel (ferro rod) / PJ Cotton Balls / Knife / Saw
- **Signaling for Rescue:** - PLB / Signal Mirror / Whistle / Flagging Tape / High Visibility Synthetic Shirt
- **Sleep:** - Your Shelter Items should help provide you with adequate sleep.
- **3 Days Without Water:**
 - Water Containers (at least one metal bottle or cup) / Water Filtration / Disinfection or Purification Device (or Chemical)
- **Navigation:** - Topo Map / Compass
- **3 Weeks Without Food:**
 - Trail Snacks / Fishing, Trapping, Snaring Gear

- Misc (Items you may choose to carry)

- Multi Tool or Swiss Army Knife
- Tyvek Piece or other Small Ground Cloth
- Small Insulated Sit Pad
- Notepad & Pen or Pencil
- Bandana / Beanie / Buff
- *Reading Glasses / Spare Glasses / Spare Contact Lenses*
- *3 Days of any Rx Medications*
- Hygiene & Toilet Kit (TP, trowel, hand sanitizer, insect repellent)
- Small Sewing/Repair Kit
- Items not on this list that you enjoy taking along on your adventures

- *The last "3" in "The Rule of 3's" is:*
- *3 Months without companionship - I have intentionally left this out as I hope you are rescued prior to this timeframe!*

• The 10 Essentials

Developed in the 1930's by the "Mountaineers", these items should be with you on every outing!

Note - The items in **RED** are already covered in our survival Kit under the Rule of 3's + 3

Navigation (map, compass, GPS)

Illumination (headlamp & extra batteries)*

Sun Protection (sunglasses, sunscreen)*

First Aid Kit

Knife, Repair Kit

Fire (lighter, matches, tinder)

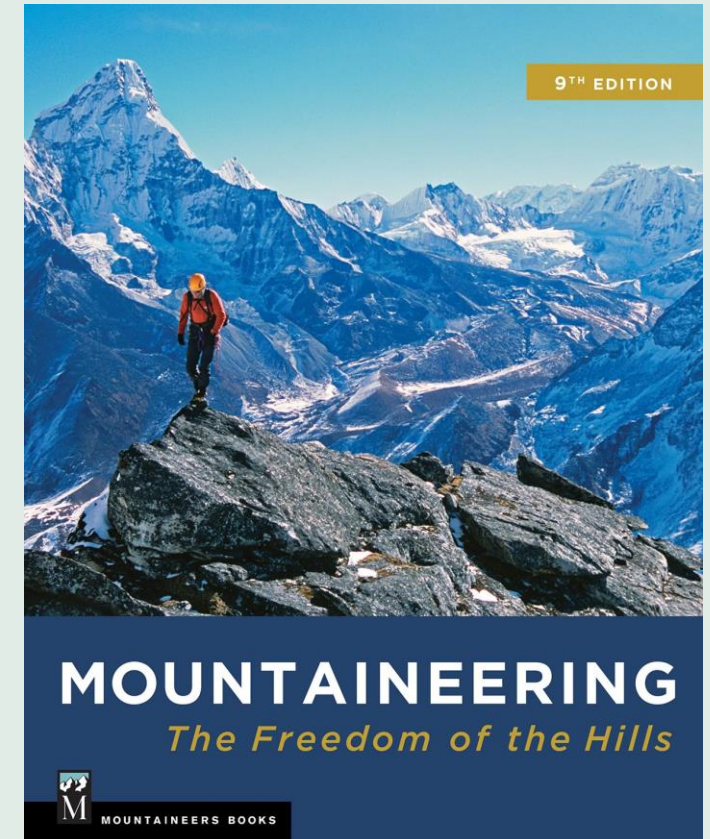
Shelter

Extra Food

Extra Water (and/or a way to filter water)

Extra Clothing (to survive an unplanned overnight)

*Not Survival "life or death" items.



Can Your Honor Student

Rub Sticks Together and Make.....Fire

Lastly:
Continuing Education
That may interest you..

- Knots - Most useful outdoor knots
- Knives - Knife safety, knife use, types of knives, sharpening
- Fire Making Methods
- Shelter Building
- Wilderness First Aid
- Cordage from natural materials
- Plant uses for: food, medicine and utility
- Map & Compass / Natural Navigation
- Primitive Skills - Shelter Construction / Friction Fire / Trapping
- Tracking

Cat Family Tracks



Mountain Lion

Dog Family Tracks



Coyote

THANK YOU!

All information: Keith Farrar, Nature Skills School
www.keithfarrar.com