

WILDERNESS SURVIVAL

7 PRIORITIES FOR SURVIVAL IN A BACK COUNTRY OR WILDERNESS LOCATION

1. POSITIVE MENTAL ATTITUDE

May be the most essential element in survival.

Confidence in yourself.

Desire to survive, no matter how difficult the situation.

Some people have an almost unbelievable will to survive while others will simply give up and quit.

Knowledge of survival skills gives one a positive mental attitude.

2. FIRST AID

Don't forget the ABC's --- **A**irway, **B**reathing, and **C**irculation which includes bleeding and shock. These are the top priorities in any emergency situation.

SERIOUS BLEEDING: Apply firm pressure directly over the wound. You may cover the wound with a dressing, your neckerchief, or handkerchief or tear off a piece of your clothing, or you may apply pressure directly with your hand. You may tie the "dressing" firmly over the wound. If blood soaks through the "dressing," do not remove it, but apply more dressings over it.

If the bleeding does not stop with direct pressure, apply pressure to the **PRESSURE POINT** between the heart and the injury. The pressure point for the arm is on the inside of the arm between the triceps and biceps muscles. The pressure point for the leg is in the groin.

If there is major bleeding and you absolutely cannot control it in any other way, apply a tourniquet. **REMEMBER. A TOURNIQUET IS USED ONLY WHEN YOU CANNOT CONTROL THE BLEEDING IN ANY OTHER WAY.**

Raise the bleeding area above the heart.

SMALL WOUNDS AND SCRATCHES: Wash it with soap and water. Put on a bandage or leave it open if you don't have a bandage.

LARGER CUTS: Wash the cut with soap and water. Stop the bleeding with pressure if necessary. Put on a dressing or a clean piece of cloth. Hold it in place with adhesive tape or a roller bandage or a triangular bandage. If the wound is serious, see that the patient gets medical aid. If the wound is large, treat for shock.

BURNS AND SCALDS:

FIRST DEGREE BURNS: The skin is merely reddened like a sunburn. No blisters are present. Hold the burned area under cool water until there is little or no pain and the skin feels cool to the touch.

SECOND DEGREE BURNS: Today these are more correctly called **PARTIAL THICKNESS BURNS**. Blisters form. The blisters may break and become open wounds. The skin is burned partially through. These burns may be anywhere from just slightly more than a first degree burn to just slightly less than a full thickness burn. Hold the burned area under cool water. Protect the burns by covering them with a dry, sterile bandage. Unless the burned areas are quite small, the victim should go to a doctor or emergency room.

THIRD DEGREE BURNS: Today these are more correctly called **FULL THICKNESS BURNS**. The skin is burned all the way through, and may appear charred. These burns may result from a flame or from a scald with hot water or especially hot grease which is much hotter than boiling water. There may be little or no pain in the area of the full thickness burn, but there are usually first and partial thickness burns beside the area of the deeper burn. Remove the clothing over

the burn and put cool soaks over the burn. Wrap a clean sheet around the victim. Cover him with blankets if the weather is cool. Treat for shock. All full thickness burns are serious, and the victim should be taken quickly to a hospital.

BLISTERS ON FEET: If a blister starts forming, stop for first aid before it becomes bad. Wash the foot with soap and water. When dry, cover the area with a piece of moleskin with the center cut out to the size of the blister. If you think the blister may break, drain the fluid by puncturing the edge of it with a pin which you have sterilized in a flame and press out the fluid. Apply a sterile dressing. If you have a "hot spot," this is the first sign of a blister forming. Stop immediately and treat it as a blister before an actual blister forms.

SPRAINED ANKLE: Do not remove the shoe. Use it as a support. Tie an ankle bandage around the foot and shoe. If the victim is barefoot have the patient lie down and apply ice or a cool cloth to the sprain. After 24 to 36 hours soak the ankle in warm water.

FRACTURES: Fractures are broken bones. Fractures may be simple (closed) or open (compound). In a closed fracture, the bone is broken and there is no wound. In a compound fracture the bone is broken and there is a wound through the skin in the area of the broken bone. The wound may be caused by the broken end of the bone sticking through the skin. The wound may also be made by the object causing the broken bone.

The broken bone may be broken all the way through, or it may be broken only part of the way through. Greenstick fractures are a special kind of fracture in children where the bone is broken but just buckled at the fracture site. Fractures may be comminuted (broken into many pieces).

Fractures may have a throbbing pain, but may not have severe pain if the broken bone is kept still. The area of the fracture is usually tender --- hurts when you press over it. There is usually severe pain with any movement of the broken arm or leg. There is usually swelling. There is often bruising. The victim doesn't want to be move the injured part, in order to avoid pain. The deformity may be visible. Bone may be seen to stick out of the skin. As you feel the area of the fracture, you may feel bone grating on bone.

FIRST AID: With any injury, remember the ABC's --- Airway, Breathing, and Circulation. Give CPR if needed. Stop any bleeding by applying pressure over the bleeding site. If the bone is out of the fracture, stop bleeding using the pressure point. Treat the patient for shock. Tell the victim to sit or lie quietly. Do not permit the victim to stand up. Do not move the victim prior to immobilizing the fracture unless there is real danger in leaving him there. Examine the victim carefully and check for any of the signs of a fracture. Treat any open wounds. If you or the victim think there may be a broken bone, immobilize the area. Remove clothing from the area if you can do so without moving the area of involvement. If necessary, apply a splint over the clothing. You must always immobilize a joint above and a joint below the area of the fracture. For example, for a fracture of the lower leg, the splint must extend all the way up the leg to immobilize the knee and down to the foot to immobilize the ankle. For a fracture of the upper leg, the splint must extend from the ankle to immobilize the knee and up on the body to immobilize the hip. For a fracture of the wrist or lower arm the splint must extend from the hand to immobilize the wrist and up the arm to immobilize the elbow. For a fracture of the upper arm, you must immobilize the elbow by putting the arm in a sling and then immobilize the shoulder by wrapping a bandage around the upper arm and body to immobilize the shoulder. You may make a splint out of anything you have: sticks, boards, newspaper, magazines, cardboard, etc. Pad the splint and use enough bandages to hold the splint in place and immobilize the joints you need to immobilize. Do not make the bandages so tight that they cause discomfort. Apply ice over the area of the fracture to minimize the swelling.

HEAT STROKE is a condition in which the body becomes overheated and the body loses its ability to compensate. The victim's face is red, hot, and dry. The skin will feel hot and dry. The pulse is rapid. The victim will usually have a headache,

may feel dizzy and nauseous, and his breathing will be slow and noisy, almost like snoring. This is a serious emergency.

Call for help immediately. Get the victim in a cool spot. Remove the outer clothing. Put cool cloths over the head and in the arm pits and groins, and sides of the neck where large blood vessels carry a large volume of blood very close to the surface.

HEAT EXHAUSTION may be mild or serious. It is caused by working in an overheated room or for a long time out in the hot sun. The victim feels nauseous. The face is pale and moist, unlike heatstroke, and there may be a lot of perspiration. unconsciousness is rare.

DEHYDRATION. The first sign will usually be dark yellow urine. you should drink when thirsty. Don't ration your water. In hot conditions move slowly, so that exertion will not cause any more sweating than necessary. Keeping moisture in the body is the best way to avoid hot-weather problems.

FROST BITE is a freezing of the tissue juice. The frostbitten part is numb and very cold. There may or may not be pain. It looks white or gray. Cover the frostbitten part with your hands or place your hands in your armpits. Do not rub the frostbitten part with anything. Warm the parts by wrapping in wool. Get the victim indoors. Cover him and give him something warm to drink. Do not try to reward the frostbitten area too quickly. if blisters occur, apply a sterile dressing.

HYPOTHERMIA is a lowering of the body temperature. It may be due to any combination of coldness, wetness, and wind. The person moves slowly, has poor coordination, stumbling, slurred speech, severe shivering, irrationality and poor judgment, forgetfulness, fatigue, blueness or puffiness of the skin, and may develop stupor, collapse, and death.

Get the victim into a warm place. Remove cold, wet clothing and apply warm heating pads or hot water bottles to the armpits, groins, and sides of the neck. Do not give alcohol. You may give warm drinks only if the victim is conscious. no not rub the victim's skin. A scarf may be placed over the victim's mouth and nose to aid in prewarming the air. You may warm the victim by placing his stripped body in a sleeping bag. If necessary another person may need to strip o their underwear and get in the sleeping bag to help reward the victim. This is a real emergency, and the victim should receive prompt medical attention.

BITES AND STINGS OF INSECTS, CHIGGERS, TICKS. Apply a cold towel or ice water to relieve the pain. if the stinger of a bee or wasp breaks off, flick it off with a finger or credit card. For further relief, you may apply a paste made of meat tenderizer or baking soda and water or anesthetic spray and steroid cream to the bite. An antihistamine may also help.

If a tick is fastened to you sot that it doesn't come off easily, gently grasp the body and rock it back and forth until it releases and comes off easily. Do not just pull on it forcefully since this may break off the head and leave it behind.

If the person is allergic to bees apply a loose tourniquet just above the sting and put ice on the sting. Call for prompt medical treatment. People with a known allergy to bees should always have a bee sting kit available which contains adrenaline for injection. Several people should be familiar with its use. An antihistamine such as Benadryl may also help.

BITES OF SNAKES AND MAMMALS

Snakes: Most snake bites are from non poisonous snakes, and most snakes will not bite unless cornered, but prefer to get away. There are only three poisonous snakes in Ohio. These are the copperhead, the timber rattler, and the swamp or Massasauga rattlesnake. The poisonous snakes in the United States are the pit vipers: the rattlesnake, the copperhead, and the cottonmouth water moccasin, and the coral snake which has a different venom. When you hike in snake-infested country, wear high-topped boots, and be careful about reaching onto ledges or into rocks and beneath piles of brush. Watch for water moccasins around water or in tree branches overhanging the water.

FIRST AID: Have the victim lie down and keep him quiet. Identify the snake if

possible. For non poisonous snakebites, clean the wound with soap and water and apply a bandage. With poisonous snakebites, there will normally be pain and early swelling. Have the victim lie down and be calm. apply a constriction band 2 to 4 inches above the bite to slow down the spread of the poison. Make it just tight enough so it is not easy to push your fingers between the band and the victim's skin. You should not make cuts and try to suck out the venom. Deaths from poisonous snake bites in this country are extremely rare. Poisonous snake bites are a significant problem, however, and the victim should get prompt medical attention. Identify the snake to the doctor if possible.

Mammals: Wash the wounds with plenty of soap and water. Call for medical help. Call the police to come get the dog if it is a dog bit. If the bite is from an animal which may carry rabies, treatment may be required.

HYPERVENTILATION occurs due to breathing too rapidly. This may occur because of anxiety. There may be tingling of the hands and feet. Calm the person, and have him breathe slowly. Breathing into a bag can help if required.

3. **SHELTER**

Very important in very hot or very cold weather.

Even more urgent if night is approaching.

Exposure is the greatest cause of death in a survival situation.

Build the smallest shelter that is adequate for your needs.

Keep the shelter low in the winter so that your body heat will help to keep it warm.

Can use a cave, under an evergreen tree, a tarp shelter, a debris hut, a snow hut, etc.

4. **FIRE**

Needed for warmth and signaling.

May use waterproof matches, a butane lighter, a metal match, and 0000 steel wool, a flint and steel, a bow drill, a hand drill, a candle, batteries and 0000 steel wool, a cigarette lighter, or chemical fire starters.

One should learn to make a bow drill and practice with it. Make it with a soft wood such as cottonwood.

Secure plenty of fuel and start the fire before dark.

5. **SIGNALING**

Prepare rescue signals.

Green brush added to your fire can make a lot of smoke and attract attention.

A whistle and a mirror are good for signaling.

You may also use flares or any bright-colored or geometric pattern in a field to attract attention. They should be at least 10 feet high.

Three of anything --- three whistle blasts, three gunshots, or three bangs of a rock against a tin pan, are all distress signals. Repeat them at intervals.

FIVE INTERNATIONAL GROUND-TO-AIR VISUAL SIGNALS

Require Assistance----- V

Require Medical Assistance----- X

No or Negative----- N

Yes or Affirmative----- Y

Proceeding in this Direction----- ▲

6. **WATER**

Water is essential. You can only live a few days without it.

It is especially urgent when it is hot and dry.

An adult needs about 2 quarts of water a day.

Do not try to ration water. Drink when you are thirsty.

You may build a solar still, collect dew or rain on a sheet of plastic or a ground cloth, or purify water. You may collect water from plants by cutting a thick grape vine which will continue to pour out water for several days. This will supply about 2 quarts of water a day but only in the spring and early summer. When the cut end scars over,

come back about 4 inches and recut it. You may also dig into a tree such as a maple, sycamore, walnut, birch, or hickory. Unpure water or water you are uncertain of can be purified by pouring it into a solar still. A special problem is giardia which is carried by animals such as beaver and is present in most streams.

WATER PURIFICATION

- Boil it for 10 minutes.
Chemical: Polarpure, Water purification tablets, 5 drops of iodine or chloral in a quart of water. Double it if the water seems dirty.
- Filter: There are a variety of water filters. However, they plug up fairly quickly unless you have one of the very expensive ones.

7. FOOD

You can live for several weeks without food, so it is a low priority.

PROPER CLOTHING FOR COLD WEATHER

During cold weather, wear clothes that hold in body heat, while allowing body moisture to escape. Wool clothing generally has been considered the best for cold and wet conditions. It does what we need it to do; it lets our body moisture escape, while keeping our body heat in. This is because the oils in the sheep hair that the wool is made of repel water. Even when wet, wool does a better job of keeping you warm than cotton. Certain synthetic fabrics such as Gortex and polartec are even better than wool, but they are fairly expensive.

As you prepare for cold weather clothing, keep warm by following the guidelines that spell the word **COLD**.

C CLEAN

Since insulation is effective when heat is trapped by dead air spaces, keep your insulating layers clean and fluffy. Dirt and grim, and perspiration can mat down and fill those air spaces and reduce the warmth of a garment.

O OVERHEATING

Avoid overheating by adjusting your layers of clothing to meet the outside temperature and the exertion of your activities. Excessive sweating can dampen your clothing and cause chilling later on. As it gets warmer or you exert yourself more, peel off layers of clothing to avoid overheating and perspiring, and, in turn, put them back on as the temperature drops or you become less active.

L LOOSE LAYERS

A steady flow of warm blood is essential to keep all parts of your body heated. Wear several loosely fitting layers of clothing and foot gear that will allow maximum insulation without impeding your circulation. Several thinner garments insulate the body better than one bulky coat by trapping air between the layers. A set of thermal or fishnet-type long johns, several tee shirts, a wool shirt, a wool sweater, and a medium-weight wool jacket are effective layering for cold weather. If the weather is wet, windy, and cold, a wind-resistant, water-repellant jacket must be worn over the other clothing. Gortex is ideal for this since it allows perspiration to evaporate while still keeping the rain out. Jackets, pants, gloves, and headgear are made from this material. While it is fairly expensive, it is much better than old-fashioned rain gear. However, its expense makes it impractical until you have finished growing. In cold weather always wear a hat appropriate to the weather and the activity. Your head makes up 9% of the total body surface area, so that a great deal of heat can be lost from an uncovered head.

D DRY

Damp clothing and skin can cause your body to cool quickly, possibly leading to frostbite or hypothermia. Keep dry by avoiding cotton clothing that absorbs moisture, brushing snow from your clothes before it melts, and loosening the clothing around your neck and chest. Since body heat can drive perspiration through many layers of breathable cloth and force it out into the air, don't wear waterproof clothes unless it is wet. Never sleep in the clothes you have worn all day because they will have moisture in them. Put on clean clothing or remove your clothing after you get into your sleeping bag if you have no clean, dry clothing.

PROPER CLOTHING FOR HOT WEATHER

Lightweight clothing that lets body heat out while slowing down the evaporation of moisture is the best kind for hot-weather travel. A light color is best, as it reflects heat away from the body. This is why the light cotton khaki fabric has been popular down through the years. Cotton cloth holds sweat for a while before it evaporates. This retention of body moisture for as long as possible helps prevent dehydration and heat exhaustion. Thus, the property that makes cotton undesirable for winter, makes it ideal for hot weather.

Choose fairly loose-fitting clothing that fully covers you, and that means long-sleeve shirts and full trousers. You will stay cooler, and you will also avoid the danger of severe sunburn.

Always wear a lightweight hat or cap when traveling in hot weather. Protecting the head from excessive heat will reduce the chances of heat stroke.

Don't forget that the temperatures can drop rapidly after the sun goes down, especially in the desert where the difference is at least 40 degrees. So take along a jacket in your pack.

FOOD IN SURVIVAL SITUATIONS

In most survival situations, food is not an essential. While you can only live a few days without water, you can live for weeks without food. The energy required to find food often will burn more calories than will be provided by what you can scrounge.

A stream may provide crayfish. Look under rocks in shallow water and be prepared to grab them fast. Boil them and eat the meat in the tails. You may be able to catch fish if you have a hook and line in your survival kit or you make a fish trap. If you are hungry enough, you can always eat worms, grubs, grasshoppers, or whatever. Virtually any animal you can catch can be cooked and eaten. It does, however, require lots of experience to successfully capture wild creatures.

Many plants can supply food. The big four are cattails, oaks, grasses, and pines. Cattails supply many foods. The pollen can be used to make a bread. The soft part of the roots can be eaten raw or cooked. The hard parts of the roots can be ground up to make a flour to make bread or the flour can be eaten raw. Acorns can be eaten. Acorns from the black oak family are quite bitter due to the high content of tannic acid, but this can be removed by boiling them in three changes of water. Acorns from the white oak family can be eaten as is. Seeds from grasses can be eaten. A few are poisonous, but are rendered harmless if they are roasted before eating. Pine needle tea contains more vitamin C than orange juice. The pollen can be eaten as can the seed.

FOOD IN WINTER SURVIVAL CAMPING

Food produce heat in your body. The normal 1800 to 3500 calories your body requires increases to 3200 to 5000 in winter. Foods rich in fats are ideal. Fats contain 9 calories per gram while sugars, (including starches) and proteins contain 4. Alcohol contains 7 calories per gram and provide many calories, but it dilates the blood vessels to produce more urine, thus increasing your water requirements. It may give you a "warm feeling," but it dilates the blood vessels in your skin causing increased heat loss from your body along with causing your kidneys to produce more urine. It may give you a "warm feeling," but it should be avoided. The St. Bernard with the keg of brandy is only useful in the movies.

SLEEPING BAGS

Sleeping bags are made as a rectangular bag or as a mummy bag which is smaller at the end for the feet. The rectangular bag is warmer.

Sleeping bags come in varying thicknesses and are made to keep you warm in different temperatures. In general, sleeping bags which keep you warm in very cold temperatures are more expensive. Better sleeping bags have a temperature rating on the box.

Sleeping bags are filled with various materials which keep you warm. These include down, hollofil, hollofil III, qualofil, polarguard, thinsulate, and fiberfil. There are advantages and

disadvantages to each.

QUALITIES	DOWN	HOLLOFIL QUALLOFIL	POLARGUARD	THINSULATE	FIBERFIL
Weight per Insulative value	Low	Moderate	Low	Low	High
Warmth when wet	Poor	Good	Good	Good	Moderate
Length of time to dry	Extremely long	Short	Short	Short	Moderate
Compressibility	Great	Moderate	Great	Great	Poor
Care Required	Dry cleaning	Machine washable	Machine washable	Machine washable	Machine washable
Overall Value For Cold Weather Camping	Good if dry Poor if wet	Good	Good	Good	Fair
Cost	Extremely high	Moderate	High	Extremely high	Fairly low

Thus, **down** is very light and packs very small, but is expensive, requires dry cleaning, and, while it keeps you quite warm when dry, does a poor job of keeping you warm when it gets wet.

Hollofil, Hollofil II, and Qualofil have a moderate weight and pack moderately compactly, but they dry quickly, are machine washable, and will keep you warm even if wet. The cost is moderate.

Polarguard is light and packs almost as well as down, is machine washable, will keep you warm even when wet, but is almost as expensive as down.

Thinsulate is light and packs very small, will keep you warm even when wet, but is quite expensive.

Fiberfil is inexpensive and will keep you warm when wet and is machine washable, but it is heavy and bulky and requires a very large amount and weight to keep you warm.

A sleeping bag can be made much warmer by placing one or more wool blankets inside of it. An insulating "space blanket" (cost \$3.00 to \$10.00 depending on quality), if wrapped completely around you can greatly help to avoid loss of body heat and help keep you warm. What is underneath you is as important as what's on top. Start with a waterproof ground cloth. Next place a layer of insulation. A foam pad is best, but you may also use newspapers, clean straw, dry grass, or extra clothing. Air mattresses provide no insulation.

WHAT TO DO IF LOST

Remain calm. don't panic. Learn survival skills in advance, so you will have confidence in your knowledge to survive. When you first realize you are lost or confused, **STOP!** Do not give in to the inclination to keep moving for 30 to 10 or even 2 minutes longer. Stop immediately.

The letters of **STOP** have a special significance for survival situations. They mean:

Stop
Think
Observe
Plan

Stop, before you do anything. Take off your pack and find a dry place to sit. Relax and regain your composure. Looking at the beauty of nature around you may help.

Think. Study your map if you have one. Try to determine where you are now. If the map alone does not help, look around for prominent land features. Can you identify any of them? Note the contours of the hills, ridges, or mountains. Attempt to locate these same contours by carefully studying your map. If you don't have a map, think about where you could have gone wrong. If you can climb easily and safely, a view from a little higher may help you to identify landmarks. What was the last point of reference you positively identified? In what general direction did you travel from there? If you were following a road or trail, or if snow covers the ground, can you retrace your tracks. You should really never enter into back country without first studying your maps thoroughly. Then identify landmarks as you come to them.

Do not make hasty judgments. If you cannot determine your way out, build a fire. A fire provides security and warmth and is conducive to clear thinking. If it's late in the day, plan to spend the night.

Observe. What do you have in your pack or pockets or on your person that may help you? What is the weather like? What natural resources are available? Where is a good place to make camp?

Plan a course of action. After considering all aspects of your predicament, adopt a plan that will best utilize your limited reservoir of energy. If you're absolutely sure you are lost or it becomes dark, stay where you are. You should only move far enough to reach a safer or more sheltered position. Put into practice the seven survival steps you have learned, and wait as calmly as you can for help to arrive.

You should have left a detailed trip plan with some responsible person before going into the wilds, and your failure to return should trigger a search effort within 24 hours after you have failed to return. You could, if you had to, survive much, much longer.

Learn everything you can about wilderness survival. This will be your greatest asset if you ever should be put in an unplanned survival situation. Always carry a basic survival kit with you when you go out on a camp or a hike.

SURVIVAL KIT

Rescue Blanket
50 feet of Nylon Cord
Hard Candy, Chocolate, Meat Bar
Waterproof Matches in Waterproof Container
Metal Match and 0000 Steel Wool
Candle/Fire Starters
Pieces of Hemp or Sisal Rope or Dryer Lint for Tender
Plastic Whistle
Mirror
Pen Light with Spare Batteries
Small Pocketknife
Metal Cup or Plastic Water Bottle
Water Purification Tablets
Clear Plastic Sheet

PROTECTION FROM INSECTS, REPTILES, RODENTS, AND BEARS

INSECTS: If you know you are going into a bad insect area, you can take along netting to cover your face and gloves for your hands. Wear a long-sleeve shirt and pants. 0.5%

hydrocortisone cream will soothe the stings and bites of insects and will relieve the itch of poison oak and poison ivy as well. if you don't have any medications, dry dabbing mud on the spots. if you are allergic to bee stings, avoid them, and carry a bee sting kit with you. Food scraps attract insects, so burn or bury them.

REPTILES: When in snake country, watch where you place your hands and feet. When going through vegetation swish a stick ahead of you to alert snakes that you are coming through. Unless you step on or are very near one, most snakes will usually do their best to keep away from you. The exception is when snakes are shedding their skins, they will strike blindly at whatever gets close to them. in really bad snake country, in addition to high boots, wear special leggings or "snake chaps." Be extremely careful when climbing up over rocks. Be careful where you place your hands. To reach up for a handhold and get a handful of snake instead can be shocking to the snake as well as to you.

RODENTS: Avoid leaving food lying around.

BEARS: Except for those found in public campgrounds, most bears are afraid of people, and you will seldom see them. so-called tame bears that live around campgrounds are not afraid of people and can be risky. Grizzly bears, wherever they are, are dangerous and must be avoided. A mother bear of any species who has cubs with her can be dangerous. Leave cubs absolutely alone. In fact, if you encounter a mother and cubs, go out of your way to stay clear of them. Move away slowly; don't run . **Never take food into your tent with you. Don't leave food where bears can find it. never feed the bears.** Use a bear bag for a smellables. If bear cables are not available, carry two ropes. Use one to through up into two trees to make a bear cable, and through the second rope over the bear cable you have made. The bear bag should be at least 15 feet up and at least 4 feet from a tree. It should also be at least 200 feet from your camp site. if you are attacked by a bear and cannot safely get away, get down in a balled-up position with your arms and legs beneath you and with your pack covering as much of your body as possible and play dead.

Map and Compass

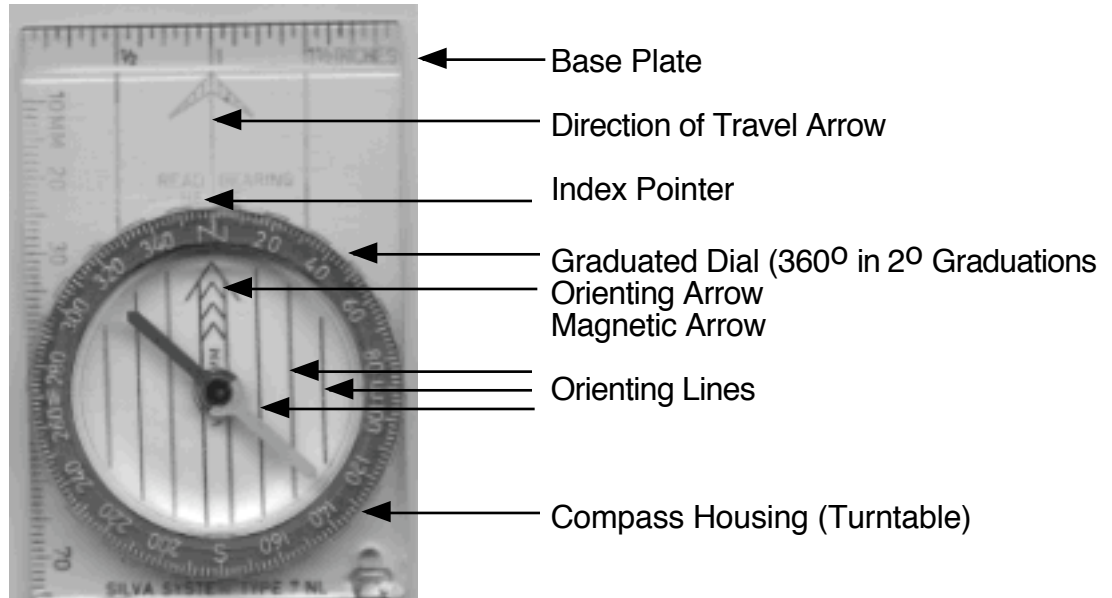
Most of the maps used for orienteering will be **topographic maps**. These maps show the features of the land along with the elevations. The three most commonly used scales are 1:250,000 (1 inch = 4 miles), 1:72,500 (1 inch = 1 mile), and 1:24,000 (1 inch = 2,000 feet). The scale should be noted on the map. The map will also note its location by longitude (vertical lines running from the north to the south pole) and latitude (horizontal lines parallel with the equator).

Maps also have **map symbols** to indicate features of the land. Man-made features are **black**, and sometimes also with **red**. Water features are **blue**. Vegetation features are **green**. Land features are **brown**. Land features include contour lines which indicate elevation. The height difference indicated by each contour line varies from map to map, but will be noted on the map. It is most commonly 20 feet. Where the elevations are quite high, the contour lines may indicate much larger height differences. When successive contour lines are far apart and evenly spaced, this indicates a gentle slope. when they are close together, they tell you the area is steep. When they run together, they show a cliff. when the contour lines of a hill are far apart at first, then come close together, the hill is a concave hill, easy to climb in the beginning then becoming steep. The height of mountain peaks, hills and certain important points are often noted to the nearest foot.

The 16 main points of the compass are **N** (north), **NNE** (north northeast), **NE** (northeast), **ENE** (east northeast), **E** (east), **ESE** (east southeast), **SE** (southeast), **SSE** (south southeast), **S** (south), **SSW** (south southwest), **SW** (southwest), **WSW** (west southwest), **W** (west), **WNW** (west northwest), **NW** (northwest), and **NNW** (north northwest). Note that when the direction is more to the north or south, the two norths or two souths come together (north northeast, south southeast). When the direction is more to the east or west, the two easts or two wests are separated by the north or south (east northeast, west southwest). In addition to these main points of the compass, the compass is divided into 360 degrees. On most compasses the large lines indicate 10 degrees and the small lines indicate 2 degrees. If the indicator line is between two lines, this indicates an odd number.

A Silva type Orienteering compass consists of three basic parts: magnetic needle, a revolving compass housing, and a transparent base plate --- each part with its own special function, but all three working together to make the Orienteering compass an efficient and highly practical instrument.. The **magnetic needle** of the Orienteering compass is suspended on a needle-sharp point around which it swings freely on a sapphire bearing. The north end of the needle is painted red --- on some models it is also marked with a luminous band. The rim of the **compass housing** is marked with the initials of the four "cardinal points" --- North, South, East, and West --- and is divided into degree lines. Each space between the lines on the housing represents two degrees (5 degrees in a few compasses). Every twentieth degree line is marked by a number --- from 20 to 360. The transparent inside bottom of the compass housing is provided with an arrow that points directly to the housings's 360° N marking. This arrow is the "orienting arrow." The compass is "oriented" --- that is turned so that the north marking of the compass points toward the magnetic North Pole --- whenever the red north end of the magnetic needle lies over the orienting arrow, pointing toward the letter **N** on the rim of the housing. In the bottom of the compass housing are engraved several lines which run parallel with the orienting arrow --- these lines are the compass' orienting lines. The compass housing is attached to a rectangular transparent **base plate** in such a way that it can be turned easily. A line to show direction is engraved in this base plate. It runs from the rim of the compass housing to the front edge of the plate where it spreads into an arrow --- called the direction-of-travel arrow. The raised part of the base plate (on which the compass housing moves) has a black index pointer on a white background to show at what degree number the compass housing

is set. The side edges of the base plate are parallel to the direction-of-travel arrow line. The side edge and the front edge of the base plate have markings for measuring--- on some models inches and millimeters, on others the more common map scales. Still other Orienteering compasses come with exchangeable scales from use with maps of different scales.



To determine the direction between two points on a map, place one side of the compass base so that it is on the two points being certain that the direction of travel arrow on the compass base points in the direction from the first point to the second point. Otherwise your reading will be off by 180 degrees. Now turn the compass housing so that the north arrow and the parallel lines on the compass housing are exactly lined up with the north arrow on the map (straight up for true north). If the distance between the two points on the map is farther than the length of the side of the compass base, it will be necessary to place some type of straight edge such as a ruler or a piece of paper between the two points and then line up the compass base with the straight edge. Now read the degrees on the compass at the indicator line which lies adjacent to the direction of travel arrow on the base of the compass.

To determine the distance between two points on a map, measure the distance between the two points on a piece of paper, and then measure the distance on the paper against the bar scale found at the bottom margin of the map. Be sure to measure from the "0" point on the scale rather than from the left end which is used to break down the major divisions on the scale for more accurate measurement of the distances greater than the exact large scale divisions. For example, with a major scale equal to 1,000, the small scale would normally break it down into 200's.

SCALE 1:24000



SCALE 1:62500



Scale 1:250,000

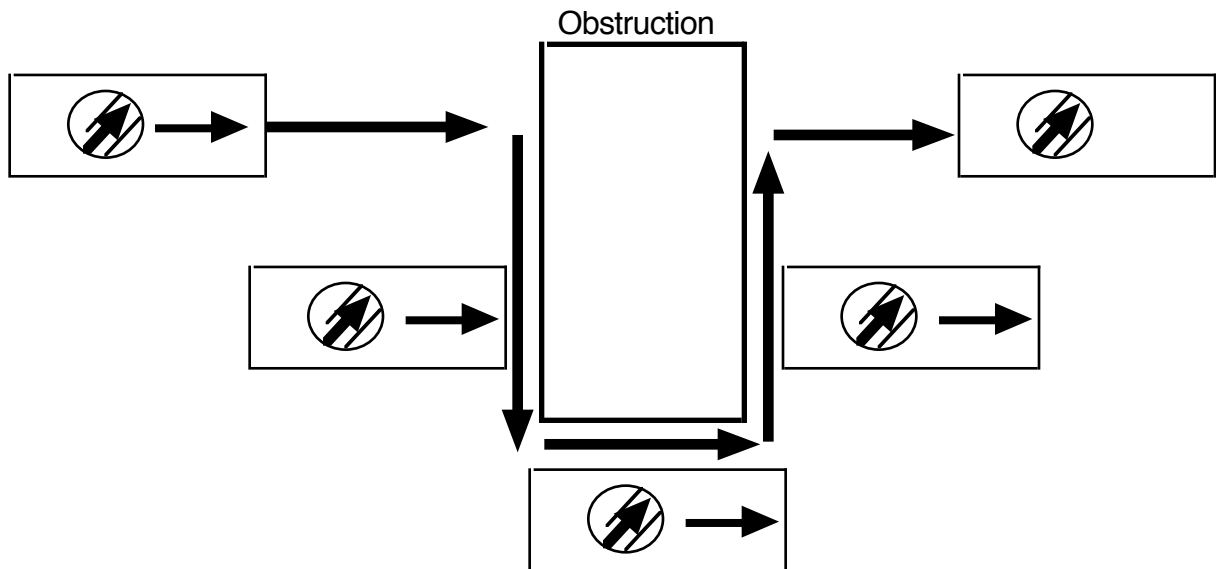


To follow a direction with a compass, line up the north arrows on the compass and sight along the direction of travel arrow on the base of the compass. Pick a landmark and walk toward it. If your landmark becomes obscured as you walk toward it, take another reading with your compass and pick another landmark. To return to your original starting point add 180 degrees to your compass bearing if it was equal to or less than 180 degrees. If it was over 180 degrees, subtract 180 degrees to get the bearing for returning to your original location. With the Silva compass, however, this is simplified so that you need merely to orient your compass as before and site with it against the direction of the direction of travel arrow or line up the white arrow rather than the red arrow with the north arrow on the base plate

To measure distance as you walk, you must determine the length of your pace (one step with each foot). This will normally be about 5 feet. To determine this more accurately, for yourself, lay out a step course which is 100 feet in length. Walk the 100-foot course and back for a total of 200 feet. Count your paces and divide 200 by the number of paces to get the length of your pace. This should give you a fairly accurate determination of the length of your pace. Caution, there is a tendency to take very large steps when determining the length of your pace. Remember that you will not be able to do this when going across rough terrain. So take normal easy steps when you determine the length of your pace. When walking a compass course, use the length of your pace. When walking a compass course, use the length of your pace to determine the distance you go with each compass bearing. To determine the number of paces required to cover the distance, simply divide the distance in feet by the length of your pace. It is helpful to carry a calculator

with you to make these calculations easier. You may also use the scale in the back of the Scout Handbook to make a calculator to determine the number of paces required to go a certain distance.

In following a compass bearing there may be occasions when there is an obstacle in your way --- a lake, a swamp, a building, or other things. You will need to walk around these objects. If you **can** see across or through the obstacle, locate a prominent landmark on the other side of the obstacle. Walk around the obstacle to the landmark and take your next reading looking back at the point from which you came, which should be directly behind you. Sight against the direction of travel arrow as you look back. If you **can't** see across or through the obstacle you can walk around it by right angles.

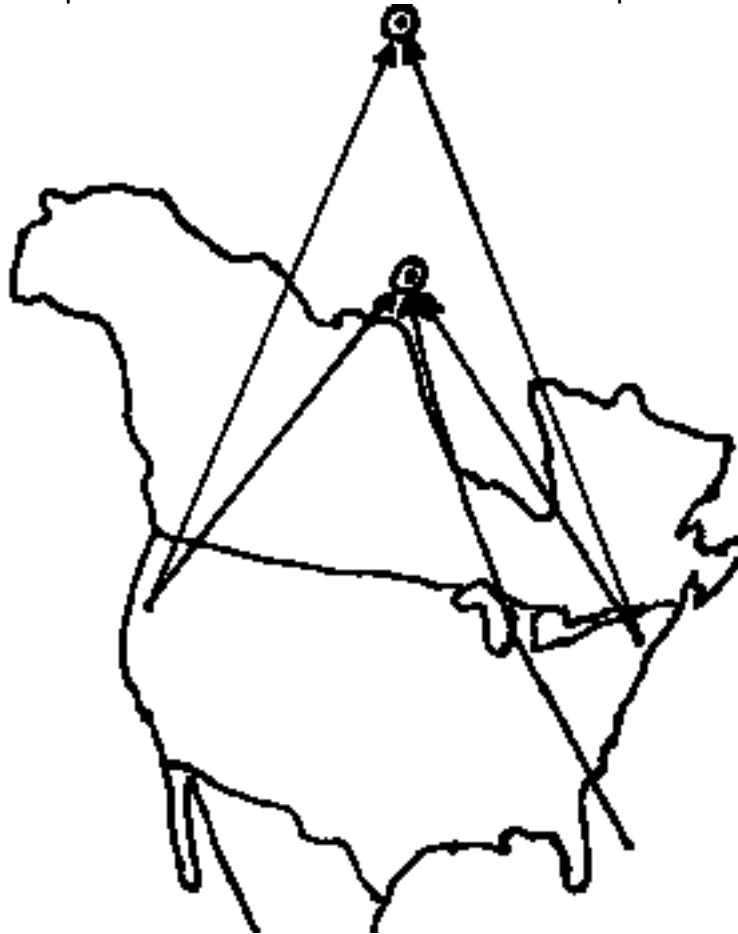


Take your reading and follow the course up to the object counting your paces. Turn at a right angle from your route (either to the right or to the left), sighting along the base plate, and counting you paces, walk until you have cleared the obstacle in that direction. Remember the number of paces required, but do not add them to your total previous number. Then turn at a right angle back to your original bearing and again clear the obstacle. These paces taken in your original direction are added to the paces required to reach the obstacle. Again turn at a right angle from your original sighting line, again sighting along the base plate so you are going in the opposite direction from the right or left turn you took originally to clear the obstacle (180 degrees from your first right angle turn. Remember the number of paces you took to clear the obstacle the first time you turned away at a right angle and go that same number of paces, but in the opposite direction from before. Once you have reached that point, follow your original compass bearing again and continue counting the number of paces until you have reached the number you had originally calculated. This technique will very accurately allow you to go around obstacles.

When you are working from a map and following a compass course, you must always remember to consider **declination**. Declination is the difference between true north (the North Pole) and magnetic North (an area just north of Hudson Bay). They are the same on a line which runs roughly through Chicago and Savannah, Georgia. Locations to the west of this line have an East Declination and locations to the east of this line have a West Declination. You may remember this by remembering the map showing declination.

From west of arrow, turn clockwise to correct for declination when going from map to compass.

From east of arrow, turn counterclockwise to correct for declination when going from map to compass.



Since the Magnetic North Pole lies 1,400 miles to the south of the true North Pole, the compass needle will point to the west of true north if we are to the east of the line of zero declination (West Declination). The north needle on the compass always points toward **magnetic north** with the north arrow on the compass housing (adjusted to **true north**), your direction of travel will be incorrect, unless you adjust for declination. The needle will always point to the **magnetic north**, but you can adjust the north lines on the compass housing to also point to **magnetic north**, so that when you superimpose the two, you will now have a true direction. Remember that if you are to the east of the zero declination line and you have adjusted your compass housing to **true north** by the map, **magnetic north** now lies south of the **true north**, so you must turn the compass housing to the west so that it points to **magnetic north**. You have thus turned the compass housing counterclockwise and you have added degrees. If you take a reading from the terrain and orient your compass housing to the magnetic north needle, you must now make an adjustment from declination if you wish to go from the terrain to the map. Remember that if you are east of the zero declination line, your compass housing arrow now points toward **magnetic north**. **True north** lies north of **magnetic north**, so you must turn the compass housing toward the east so that it now points toward **true north**. You have thus turned the compass housing clockwise and you have subtracted degrees. If you are west of the zero declination line, you just reverse this process so that you turn the compass housing to the east (clockwise) if you are going from a map to the terrain and turn it to the west (counterclockwise) if you are going from the terrain to the map. The declination is about 4 degrees West in Dayton. East of the zero declination line is West Declination, and west of the zero declination line is East Declination. Since the **Magnetic North Pole** lies 1,400 miles to the south of the true North Pole, The declination may be significant. It is

about 18 degrees west in Maine, 18 degrees east in Washington state, and about 30 degrees east in Alaska.

A much easier method is to make your map speak “**compass language.**” To do this draw parallel lines on your map 1 to 2 inches apart to line up with the angle of declination. Use your compass as a protractor to do this. For West Declination, the parallel lines will be to the West (left) of North, and for the East Declination, the parallel lines will be to the East (right) of North.

THE THREE BASIC STEPS IN TRAVELING BY COMPASS AND MAP

Step 1. On the map, line up your compass with your route. Place the Orienteering compass on the map with the edge of its base plate touching both your starting point and your destination, with the base plate's direction-of-travel arrow pointing in the direction you want to go. Disregard the compass needle.

Step 2. On the compass, set the housing to the direction of your route. Hold the base plate firmly against the map with your left hand. With your right hand, turn the compass housing until the orienting arrow on the bottom of the housing lies parallel with the nearest magnetic north line drawn on your map, with the arrow-point to the top. Disregard the compass needle. The compass is now set for the direction of your destination. By using the **drawn-in magnetic north lines**, you have automatically compensated for any compass declination in the area covered by your map.

Step 3. In the field, follow the direction set on the compass. Hold the compass level in front of you with the direction-of-travel arrow pointing straight ahead. Turn yourself by shifting your feet while watching the compass needle until the needle lies directly over the orienting arrow on the bottom of the compass housing, with the North end of the needle pointing to North. The direction-of-travel arrow now points to your destination. Raise your head, choose a landmark --- a rock, a large tree, a person, or some other sighting point --- in that direction. Walk to that landmark without looking at your compass or your map. When you have reached it, again the direction with your compass on which you have been careful not to change the setting. Ahead is another landmark leading to your destination.

You may pinpoint your location by picking two prominent landmarks that you can see and identify on the map. Take a sighting on each of them and draw a line on your map from each of them at the number of degrees you have determined from your compass reading. The point at which the two lines intersect should correspond with the location.