

## How to Avoid Getting Lost

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How can a person avoid getting lost? A good question and there is probably no simple answer (except never leaving home). However, there are some tried and true techniques that help. If you learn these and put them together (and use them of course) you will greatly reduce your chances of getting lost. I think it is helpful to divide this subject into two rather broad categories:

I. Developing a "feel" for the land, a sort of mental map. We all do this more or less with our home territory. We know which streets intersect and approximately how they relate to each other. Most of us have little trouble finding our way between our homes, work, friend's houses, etc. When we visit Joe we just go to his house, we don't have to think about going so many blocks one way then looking for street names etc. When we arrive in unfamiliar surroundings it helps to quickly start developing a similar mental picture of the territory.

II. "Formal" navigation using compass, altimeter or other aids (including some natural ones). This is the technique that allows a person to go from one place to another based on information from a map or directions from someone else. This can be anything from following a road map to an unfamiliar town to a complicated cross-country hike with many intermediate landmarks requiring compass bearings etc. This type of navigation seems less natural and usually requires more effort to learn. However it is necessary in unfamiliar territory. It can also help us more quickly form the "mental map" of the first type of navigation.

In the following list I will not attempt to distinguish which techniques fit which category. Many of them fit both. All good navigators use both anyway. The distinction is useful mostly in the learning process. Practice with a compass, practice developing the mental picture and practice using both. In the field use them both together. Use "formal" navigation to help develop a mental map as well as to determine which way to go, and use the mental map to supplement the formal techniques. Properly used a compass is almost never wrong but the person using it can make mistakes. If your compass bearing seems strange, re-check the bearing.

Before going into the various techniques we should at least briefly consider the latest navigation tool on the market: The Global Positioning System receiver. These are now becoming inexpensive enough that the average person can afford one. They have the potential to be a wonderful aid and to keep you from getting lost. However if not properly used they can be downright dangerous. The potential problem is that some people may depend too much on the GPS unit and fail to learn and use the other necessary techniques. Obviously batteries can die but there are other problems as well. The GPS may tell you where you are and which direction you need to go but it cannot tell you what to do about dangerous or impassable terrain on that route. If an impassable canyon or an area of high avalanche hazard blocks your route you need to fall back on the old fashioned map and terrain knowledge to find an alternate route. In addition, these units must be used correctly. In some locations (especially heavy vegetation) they may not be able to "see" enough satellites to get a fix. They also take some time after turn-on to start

working. A careless user can easily get incorrect readings using GPS. Believe such an erroneous reading and you can be in real trouble. If you have the standard navigation skills the GPS can be a great addition to your toolbox. Otherwise it may just lead to overconfidence and trouble.

The following are methods which most backcountry travelers find useful:

1. Simply be alert to your surroundings, especially as you travel. Most of us use a variety of clues to help know where we are. Most of these clues are visual although sounds and even smells can help. (The rotting animal carcass can provide a very memorable smell to be recognized on the way back). The person who pays attention to trees, rocks, hills, streams, etc. will have a great advantage over the guy who simply looks at the trail in front of him. Try to look at features from several different angles as you move. Try to put together in your mind how different features relate to each other and to your route. (Of course being alert to surroundings also enhances your enjoyment of the outdoors, the reason most of us are there in the first place.)

2. Try to keep track of your directions and associate them with the territory around you. For example, notice not only the odd shaped hill, but also notice that it is northeast of you and runs approximately east and west. Try to be aware of the direction the trail is going. Notice that that hill is ahead of you on the trail, then off to the right a bit as the trail turns. A compass is handy to keep track of the direction the trail runs. Again you are trying to form a mental picture of the territory and how it is oriented. Some of us are better at this than others but I think we can all improve with practice.

3. Occasionally look behind you to see how the territory will look on the return trip. Be especially diligent at all junctions or anywhere else the trail is not glaringly obvious. All those odd tree branches and readily recognizable rocks will look very different from the other direction.

4. Learn to use a compass reasonably well. You may not need to take a bearing to within 2 degrees but you should be able to figure out which way is north. This means understanding declination (unless you will only be in areas where declination is less than about 5 degrees). Learn to go back the direction you came from using your compass (see appendix).

4a. If you are likely to travel after dark or in a whiteout, learn to use the compass \*well\*. Learn to follow a bearing, a back bearing, detour around obstacles and get back on route, etc. Learn how accurately you can follow a bearing under different conditions and how to compensate for that inaccuracy (offset bearings, landmarks etc). If your night or whiteout travel will be in mountainous areas get an altimeter and learn to use it (and what its limitations are).

All compass, altimeter, and map techniques are best learned by practice in familiar surroundings under good conditions. It's a bit late to learn when you are in a howling blizzard wondering which direction to go to find camp or your car. Practice, practice, practice. It \*will\* pay off if you spend significant time in the backcountry.

5. Use the compass \*long before\* you get lost, including at the trailhead and at several

intermediate points. Use it to help develop a "feel" for which direction you are traveling as well as to learn which way you go out so you know which direction you must go to return. It does little good to know which direction is which when you are lost unless you have some idea of which way to go. (Well, let's see. North is that way, South is opposite and East is that way. But which direction is the \$%^@\$\* car?) In fact it is a good idea at the trailhead to get out your map and compass and orient the map with the terrain. Put the map so that map north is true north and look around. Identify the direction you plan to travel and as many landmarks as you can. If you don't have a map, at least do this with the compass and look at terrain features, the direction the trail goes, etc. Be sure you know which direction \*you\* are facing when you look at landmarks. A solid mental picture of your starting point is a good start to your trip.

6. Learn to recognize nature's direction indicators. For example moss does not always grow on the north side of trees but it commonly does grow on a preferred side which varies with location and depends on the prevailing winds. Be aware that these indicators may change from place to place as the prevailing winds change. This can occur in quite short distances if hills affect the wind. (Of course in places like the Pacific Northwest, moss can grow on all sides of the trees. Maybe you can look for which side has the thinnest coat of moss.) Tree branches can also be affected by prevailing winds.

The sun and shadows can also give indications of direction if you take time of day into account (remember to account for daylight savings time). One excellent natural "compass" is to drive a stick into flat ground and mark the end of the shadow. Wait a while and mark where the shadow end has moved. The shadow will always move west to east. If the sun is out this is easy to do and quite precise as long as the ground is flat. It is \*not\* accurate if the end of the shadow is on a slope. The longer the stick and the longer you wait between measurements the easier it is to determine direction.

These indicators are usually not very precise (except for the North Star or astronomical readings taken with specialized equipment). However they can help you keep a general idea of which direction is which. If the moss on trees was to your left and suddenly you notice that it is toward you, maybe you changed direction without noticing. Check your compass or otherwise find out what happened.

7. Unless you are certain you will \*never\* leave the trail, learn to use an offset bearing and linear landmarks (see appendix).

8. Learn to read a map. Try to carry a good map of the area you are in. However even if you don't have a map with you the experience of knowing how to use one will help with your ability to construct your own mental map of the territory.

9. \*Never\* place all your trust in someone else. Spouses, "knowledgeable" friends, SO's, party leaders all make mistakes. Try to keep track of where you are yourself. If you feel lost ask the leader for help or for time to orient yourself. This will promote safety on that trip and help you learn for the times you are on your own. If the leader can't or won't help don't go with him/her again (if you get back that time). Good leaders recognize that (a) they make occasional mistakes

and a crosscheck is useful and (b) occasionally people get separated from the group and they better have some idea where they are. The only exception I can think of is the rare case when speed becomes important to safety (eg. you gotta' get off the mountain before the storm hits). Then the leader may be justified in asking you to just follow. (He should, however, remain open to questions while you move.)

#### Appendix: Use of a compass

There is a wide variety of compass styles available and it is not feasible to describe all of them here. However most if not all come with directions for that specific style. Study those directions carefully, even experienced people may learn a trick or two. Here we will concentrate on the orienteering compass style. This type of compass is common and has some very useful features. Unfortunately I can't draw any good pictures in this text file. However the instructions which come with your compass should be illustrated and provide better information than I can here. Be sure you know how to set a bearing with your particular compass and how to read a bearing to various objects.

There are two problems that affect all standard compasses. In fact while people think a compass points north, that is not always true and in most cases only approximately true, and sometimes not even that. The problems are:

1. Magnetic materials and fields: Most people are aware that iron and other magnetic substances can cause errors in compass readings. You must be careful to keep these away from the compass when taking any readings. Usually a couple of feet away from a small magnetic object is sufficient. It is a good idea to take your compass and hold it at various distances from your pack and other tools to see how far away you have to hold it to get away from interference. Your aluminum pack stays won't affect it but be careful of things like knives, belt buckles, other tools, stoves and utensils etc.

Less well known is that electrical equipment usually produces magnetic fields that can affect a compass. Check all radios, GPS devices, flashlights etc. to see if they affect your compass. Do these checks with the equipment both on and off, a flashlight, for example may not affect your compass when off but when you turn it on it may have an effect.

2. Declination: A compass does not necessarily point at true north. Instead it points at the magnetic north pole. If you happen to be where this is in line with true north your compass will point pretty much to true north. (In parts of the eastern US this is true.) Otherwise it will point a bit east or west of true north. The difference between true north and the direction your compass points is called declination. Good maps have a declination indicator in the margin (usually at the bottom) which will give you the declination for the area the map covers. For example in the Mt Hood area the compass will point about 21 degrees east of true north.

The magnetic pole is not stationary but tends to move about a bit. Along with the declination indicator your map will probably tell you how much the declination is changing per year and in which direction.

Of course you need to compensate for this declination. Some compass models have an adjustable declination built in. Follow the directions and set the declination properly before you leave town and the compass will then take care of this for you. If your compass lacks this adjustment you will have to compensate for the declination. (See below for a trick to help.) If the declination is east, you need to subtract that amount from your desired direction of travel before setting your compass. If declination is west, add that value to direction of travel. Using the 21 degree east declination for the Mt Hood area, I would subtract 21 degrees from my desired direction of travel. If I want to travel due south (180 degrees) I would set my compass to 159 degrees.

What if the above calculation gives a negative number or one greater than 360 degrees? In that case remember that the compass starts over after 360 degrees. If the number is greater than 360, subtract 360 from it. (eg. west declination of 15 degrees, you want to travel 355 degrees true.  $355 + 15 = 370$ .  $370 - 360 = 10$ . Set the compass to 10 degrees.) If you get a number less than zero, subtract the absolute value of that number from 360. (eg. on Mt Hood with a 21 degree east declination you want to set a course of 10 degrees true.  $10 - 21 = -11$ .  $360 - 11 = 349$ . Set your compass to 349 degrees.)

I. Shooting a "back bearing." The compass is handy for going back the way you came from. To use this you need to set the "direction of travel" when you go out. (See directions that come with your compass, I won't attempt to describe it here.) The usual technique is to add or subtract 180 degrees from that bearing to find the return bearing. It works if you don't make a mistake but is unnecessarily complicated. Even the best of us can make simple arithmetic errors, especially when we're tired, cold, and in a hurry. A much simpler technique is to simply turn the compass around and pretend the south needle is the north. This always gives an exact reversal of direction.

II. Offset bearings (also known as "aiming off"). It's nice to know that if you travel for 5 miles on a bearing of 213 degrees magnetic you will be back at the trailhead. The problem is that most of us are doing very well if we can stay within 3 degrees of a bearing, even worse in anything but open country. In 5 miles a 3 degree error will put you off course by a quarter of a mile! You will probably miss your target and if you come to the road you won't know which way to walk. The solution is to make a deliberate error in a known direction. Determine how accurately you can set and follow a bearing, then aim that far to a given side. Pick a linear landmark (road, stream, etc., also known as a "handrail") and when you arrive at it follow it back to a known location such as your car or a recognizable stream crossing. This is the recommended technique, for example, to get off Mt. Hood in a whiteout. In that case, people can aim to the east or west of the lift line. Then when the altimeter (or a good guess) says they are well below the top of the lift they simply turn the appropriate direction, find the lift, and walk down under it. If somebody tried this without knowing which way to the lift he could easily go the wrong direction and end up either on White River Glacier or among the cliffs of Zig-Zag Canyon, both potentially dangerous places.

And one trick to make your maps easier to use: Draw north-south lines on them and declination lines (that is, lines running magnetic north-south as well as true north-south). These lines should

be about an inch apart so when you place a typical compass on the map there is always a north-south line and a declination line under it. This is much easier if you have access to a drafting table.

This is not intended to be a comprehensive course in cross-country navigation. It is intended to give some suggestions. You won't learn navigation by reading anyway. Practice, practice, practice. When you try something and it doesn't work, try to figure out why and what you can do better next time. Try to find someone good at navigation and spend time with him/her in the field watching, asking questions, and learning. How much of an expert you need to become will depend on what activities you engage in but be sure your skills are up to your activity. If in doubt try something easier and save that particular trip for when you have improved. Trust me, getting lost is no fun.

Finally, be sure somebody knows where you are going, when you plan to return and who to notify if you don't come back. If all else fails and you get lost (or injured) nobody will come looking for you until the proper authority (usually the sheriff's dept.) is notified. Even when the search starts it will be much more effective if searchers know your destination, not just where you parked your car.

Even if you get very good with all these techniques there is no guarantee you will not get lost. If that happens, first sit down and relax a bit. Sometimes just a pause will allow you to reorient yourself. Your mind will be much more effective if you can remain calm. Get out your compass and see which way is north. (You do have one don't you? And you did orient yourself at the trailhead, right?) If you have no compass try to find a natural direction indicator (North Star, drive a stick in the ground and see which way the shadow moves etc.). Look around for distinctive landmarks (but be careful before you decide that that hill is the same one you saw from camp. Don't let similar hills fool you.) In the best case you may discover where you are and be able to return without problems. If this doesn't work consider yourself lost and act accordingly.