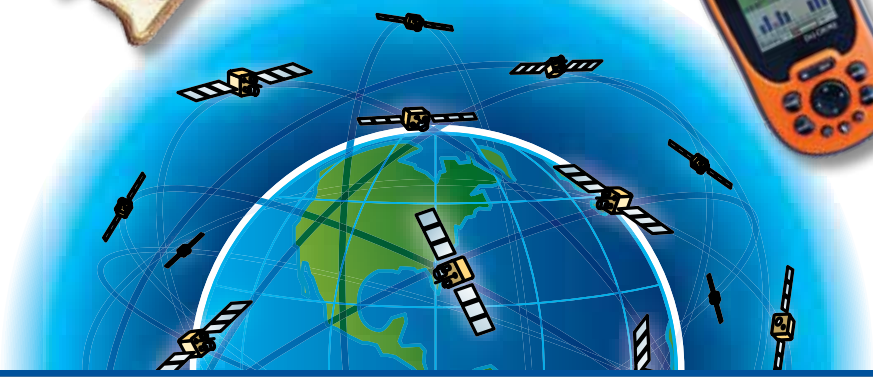
MERIT BADGE SERIES

GEOCACHING



Scouting America

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The secret to successfully earning a merit badge is for you to use both the pamphlet and the suggestions of your counselor.

Your counselor can be as important to you as a coach is to an athlete. Use all of the resources your counselor can make available to you. This may be the best chance you will have to learn about this particular subject. Make it count.

If you or your counselor feels that any information in this pamphlet is incorrect, please let us know. Please state your source of information.

Merit badge pamphlets are reprinted annually and requirements updated regularly. Your suggestions for improvement are welcome.

Who Pays for This Pamphlet?

This merit badge pamphlet is one in a series of more than 100 covering all kinds of hobby and career subjects. It is made available for you to buy as a service of the national and local councils of Scouting America. The costs of the development, writing, and editing of the merit badge pamphlets are paid for by Scouting America in order to bring you the best book at a reasonable price.

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SCOUTING AMERICA
MERIT BADGE SERIES

GEOCACHING

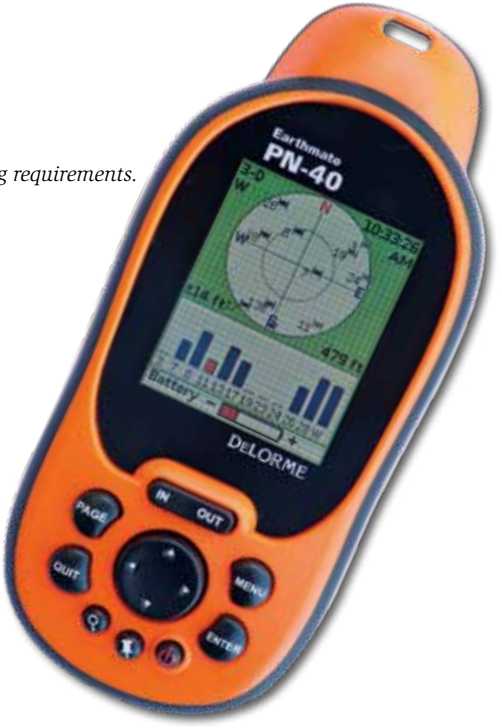
"Enhancing our youths' competitive edge through merit badges"

Scouting America

Requirements

Scouts should go to scouting.org/merit-badges/geocaching or check Scoutbook for the latest requirements.

Scan this QR code for the latest Geocaching requirements.



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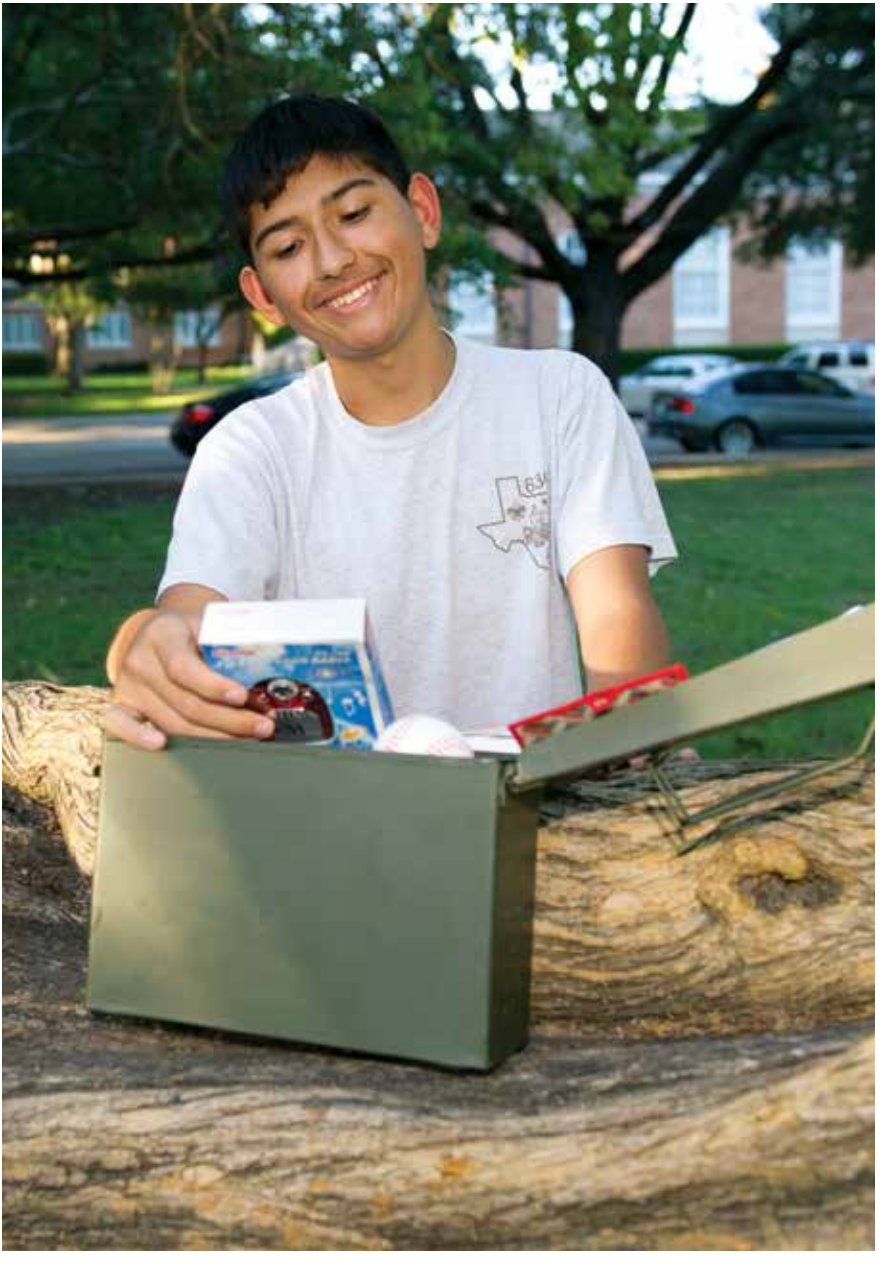


What Is Geocaching?

The word *geocache* is a combination of "geo," which means "earth," and "cache," which means "a hiding place." *Geocaching* describes a hiding place on planet Earth—a hiding place you can find using a GPS unit. A GPS (Global Positioning System) unit is an electronic tool that shows you where to go based on information it gets from satellites in space.

The History of Geocaching

On May 1, 2000, President Bill Clinton announced that a limitation called "Selective Availability" would be removed from the U.S.-sponsored GPS satellite system. This meant that civilian users of the Global Positioning System would be able to pinpoint locations up to 10 times more accurately than they did before.

GPS enthusiasts celebrated, because now anyone with a GPS receiver could, as the White House put it, "precisely pinpoint their location or the location of items left behind for later recovery."

Two days later, on May 3, a GPS enthusiast named Dave Ulmer set out to test the accuracy of the upgraded navigational technology. He hid a bucket of trinkets in the woods outside Portland, Oregon, and announced the bucket's location in an internet posting.

Dave called the idea the "Great American GPS Stash Hunt." The idea was simple: Hide a container outdoors and note the coordinates with a GPS unit. Then invite people to locate the container, using only their GPS receivers. The rules for the finders were equally simple: "Take some stuff, leave some stuff."

Think of setting off on a treasure hunt and using a GPS device to find the location of the hidden prize or "cache."

This first high-tech treasure hunt began as a hobby that is still active today, including the basic parts of geocaching: a container, a logbook for the finders to sign, and the concept of a prize with the "take something–leave something" guideline.

The original cache (then called a "stash") was quickly found, and more caches were hidden in California, Kansas, and Illinois that same week. Within a month, a cache had been hidden as far away as Australia, and geocaching was soon a worldwide sport. Today there are more than a million caches hidden around the world in over 200 countries.

Here is Dave Ulmer's original posting:

From: Dave (news2yousNOneSPAM@hotmail.com.invalid)
Subject: GPS Stash Hunt... Stash #1 is there!
Newsgroups: sci.geo.satellite-nav
Date: 2000/05/03

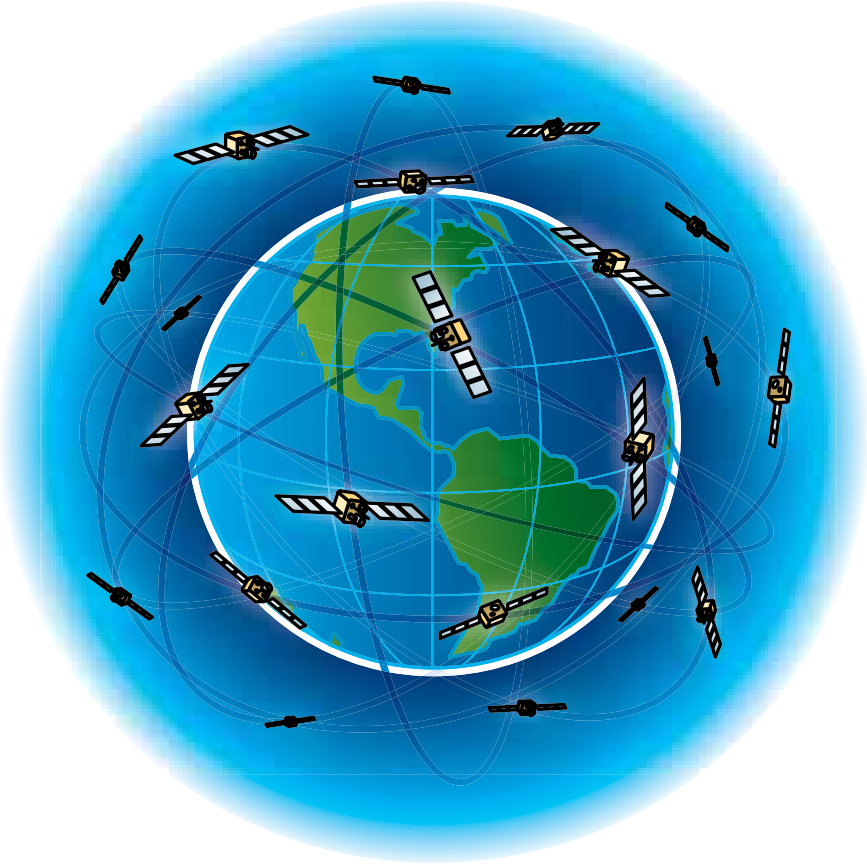
Well, I did it, created the first stash hunt stash and here are the coordinates:

N 45° 17.460
W122° 24.800

Lots of goodies for the finders. Look for a black plastic bucket … Take some stuff, leave some stuff! Record it all in the log book. Have Fun!

So many public geocaches are hidden now that you are likely to find caches close to your troop meeting location. Geocaches may be hidden in your neighborhood close to where you live. The search for many of these will take you on beautiful hikes and may give you challenging puzzles to solve to find the treasure.

Geocaching is great for fun and exercise. You can use this sport to liven up troop meetings, to encourage others to join Scouting, and for public service. It's a sport that's a perfect fit for Scouting, and it's a great way for Scouts and non-Scouts to share their enjoyment of the outdoors. Use your Scout skills and follow the Scout Oath and Scout Law as you embark on this new pastime.



The Global Positioning System

The Global Positioning System (GPS) is an electronic navigation network that uses signals from satellites orbiting Earth to determine specific locations on or near Earth's surface. GPS technology can be used anywhere in the world 24 hours a day because the system of satellites circles Earth all the time, and some number of them are always above you. The system works in any kind of weather and does not require any setup fee or subscription charge.

Basically, GPS lets you determine your location and find other locations on Earth, and helps you navigate to and from those places.

How Does a GPS Receiver Work?

A GPS receiver (GPSr) calculates its position by carefully timing the signals sent by the 24 to 30 GPS satellites high above Earth. At any given time, there are usually several satellites over any given place on Earth. Each satellite continually transmits data that indicates its location and the current time. All GPS satellites transmit signals at the same instant, but the signals arrive at a GPS receiver at slightly different times. The farther the receiver is from a satellite, the longer the signal takes to reach the receiver.

The receiver uses the arrival time of each signal to measure the distance to each satellite. Once the receiver has detected signals from a minimum of four satellites, the GPSr can calculate the receiver's location and altitude and display these coordinates on the GPSr screen. The more satellites the receiver has tracked and acquired, the better the accuracy of the GPSr calculations.

You can also enter a location into the GPS receiver, and the unit will calculate how far you are from that point as well as what direction you need to travel to reach that destination. Many GPS units have a screen that serves as an electronic map to show the user's location or where the final destination is.

What Can Go Wrong?

If anything blocks or interferes with the satellite signals reaching the GPS receiver, the GPS can give inaccurate information or just not work at all. Trees, buildings, canyons, or valleys can affect the signal strength or modify the time it takes for signals to reach the receiver, thereby degrading the ability of the GPSr to calculate the location accurately.

In addition, no civilian GPS receiver has 100 percent accuracy. A GPSr will rarely lead you to the "exact spot." This means that you get close but not quite on target most of the time, even if the GPSr says you are within a foot of the hidden geocache that you are seeking.

A common error for beginning geocachers is to try to get the number in the GPS unit's "distance" field to go to zero. It almost never does, and even then it's unlikely to be correct. The accuracy is often at least a 20-foot radius, and sometimes greater, which means the geocache could be 20 feet or more from you in any direction. Quite a bit of searching for "ground zero" or the exact final spot is required in most cases. As new geocachers soon learn, it's necessary to use your head at that point and begin searching.

A basic GPS receiver (the simple, handheld type typically used for geocaching) gives you the shortest route of travel. It does not look at topography or at rivers, roads, or other obstacles you may come across on the way. This is one reason that a map is helpful in geocaching. Maps give you the big picture of the area.

Like any electronic device, a GPS receiver will not work if it loses power. A GPSr also depends on you to input correct information. A small mistake when entering coordinates can send you a few miles—or hundreds of miles—off course.

A Scout is trustworthy. Your GPS unit is not! Be aware of the pitfalls and be prepared.

Always remember these things about your GPS receiver:

- The GPS compass arrow points to a direction that may not be the best route. Look where you are going and what is ahead of you to choose the best way to get there.
- You may lose the signal from the satellites.
- Your unit's accuracy may be very low due to interference.
- Your unit's batteries can be low or die.
- You may have input the wrong information.

Types of GPS Units

Among the many different types of GPS units, some cost as little as $50, or up to $10,000. Some are better for geocaching than others. Several GPS receivers are dedicated to the sport.

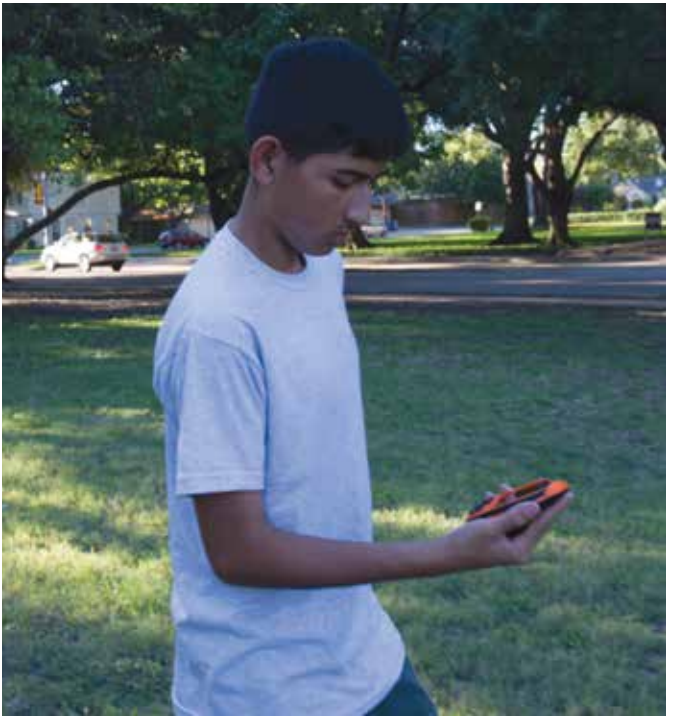
When you consider all of the uses you may find for a GPS receiver, you may decide you want a general navigation tool that is useful beyond geocaching and practical for other outdoor purposes. Think of all the things you may want to do with your GPS unit and buy accordingly. While an inexpensive, no-frills unit is fine for geocaching games and for public geocaching, you do want the ability to quickly download data from your computer. You may also want to create custom geocache courses.

The most important features in any GPS receiver are basic functionality and ease of use. Advanced features are tempting and helpful, but they can be expensive. A unit with a color screen and lots of maps can cost hundreds of dollars, so think about how often you will use these features.

There are many entry-level GPS receivers that have a wide variety of functions. Many good GPS units can be found at sporting goods retailers and discount stores. With your parent or guardian's permission and assistance, you may also find good deals on used or discontinued models from online sources.

If you are planning to buy a GPS receiver, first decide which type you need: a car navigation system or handheld outdoors device?

Automobile GPS units and smartphone navigation apps are useful for driving and routing by car. However, they are often not what you want for geocaching, as they tend to route you onto major roads and freeways, and they don't have the compass and arrow capability needed to zero in on the cache.



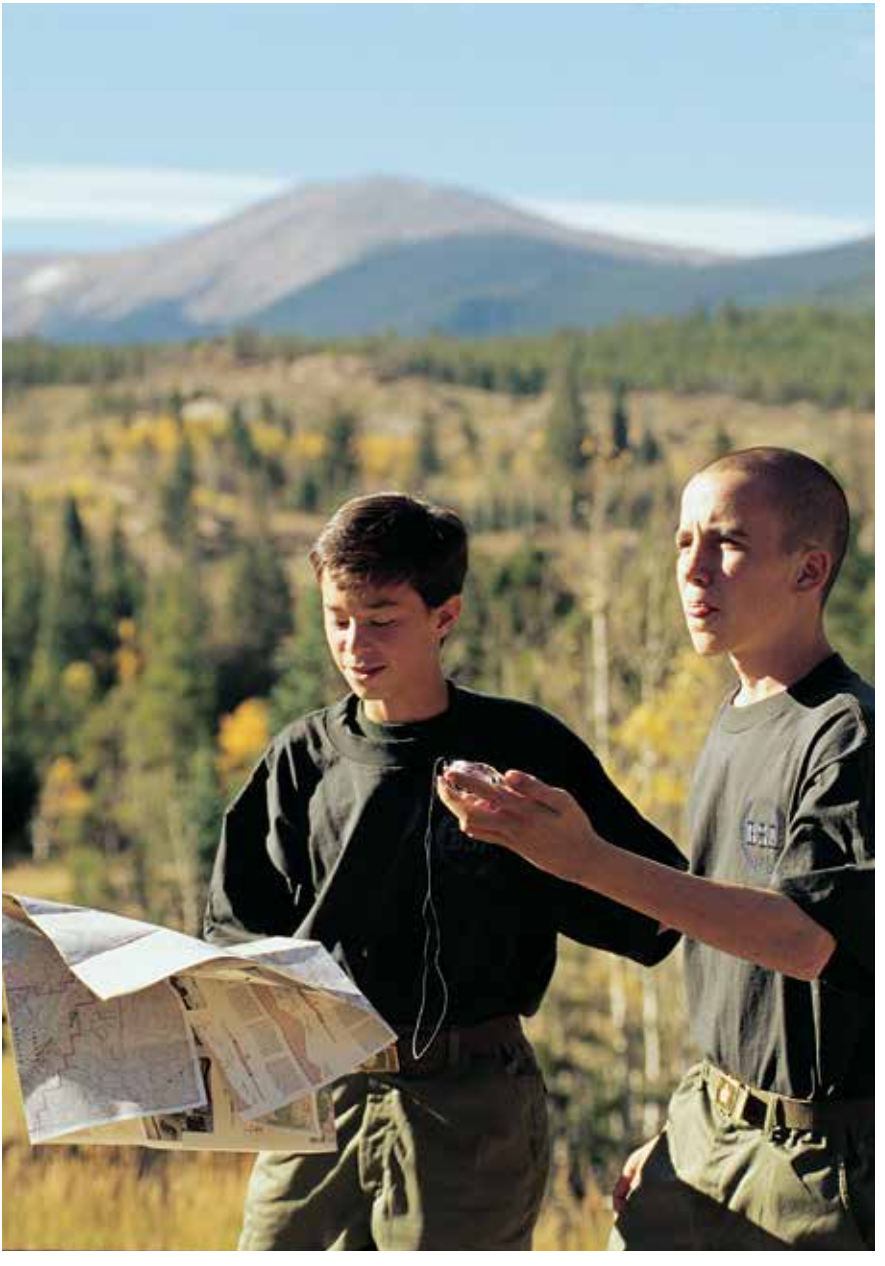
Handheld outdoors devices are designed to be lightweight and rugged for outdoor use for hiking, camping, and geocaching. These are good for Scouting activities. Most geocaching can be done with an inexpensive, simple, handheld unit.

Many smartphones have GPS and geocaching capabilities, and several geocaching applications are available for these phones. While the apps do not have all of the features of a dedicated GPS unit, the GPS in the phone works without connection to the internet or cellular network. Since a good connection to the internet is not always available, a smartphone with GPS may be useless if you did not plan ahead and download geocaching information before you headed out on your adventure. For a Scout or a troop, a dedicated GPS receiver is generally a better choice than a smartphone. A GPSr is more durable and has many additional functions that are useful for Scouting activities.

Before you buy, decide what functions or features are essential to you. In a car system, for example, spoken navigation instructions may be essential, but this feature is not needed for geocaching. People who run or bicycle might want a fitness and cycling GPS device that can track the wearer's speed, distance, and calories burned. That type of GPS unit is not really useful for geocaching, however. It lacks the compass and arrow feature of a dedicated geocaching unit. For a hiker or backpacker, rugged construction, small size, light weight, and backlighting for nighttime viewing are important features.

Note the types of batteries the unit can use. Does it come with its own special rechargeable battery? Can you convert to regular batteries if necessary?

Enthusiasts who do a lot of geocaching find that having a unit that can download detailed information such as cache type, hints, and logs from geocaching.com is a real plus. This allows "paperless caching" and avoids the need to print out descriptions and clues from the geocaching.com listings. (The kinds of cache information that are posted at geocaching.com are covered in detail in "Getting Started With Public Geocaching" later in this pamphlet.)



Using Your GPS Receiver

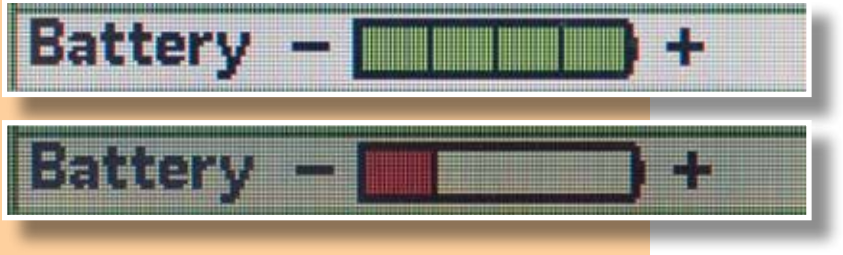
To list all the functions of every GPS receiver on the market would be impossible. The overview in this section covers the basic functions of a generic GPSr. Each GPS unit comes with detailed instructions to help you, but much of your knowledge will come from giving the various screens and buttons a try.

Be sure to read the manual that comes with your GPS unit.

Basic Functions of a GPS Receiver

Basic geocaching will require you to be able to switch between different function screens, to enter coordinates, to mark a waypoint, and to know how to use the compass screen and its data fields.

After locating the device's on/off button, next learn where the battery-level indicator is, and how to either recharge or change the batteries. Then you can begin to explore the features of your GPS receiver. Always check your battery levels before going geocaching or setting up a geocaching event. It's also a good idea to carry an extra set of fresh batteries—just in case.



The Basic Buttons

Your unit will likely have an *ESCAPE* or *BACK* button, a *PAGE* button, an *ENTER* button, a *GOTO* button, a *MARK* button, and a series of buttons or a toggle key for moving left and right and up and down within the GPS receiver's functions. Using your manual, learn where these buttons are and what they do. Some of the function buttons may be on the face of the unit; others are on the side. Touchscreen GPS receivers have few physical buttons on the device—most navigation and other functions are accessed through tapping touch-sensitive icons on the screen display.

The *NAV* or *PAGE* Button. Next, look for the *NAV* (navigation) or *PAGE* button or other means to change from screen to screen. Most GPS receivers have several screens: a screen to show how many satellites the GPSr can see and has acquired (meaning it has picked up the satellite signal), a compass screen, a screen with a map display, and perhaps a screen that displays fields of information.

The *ENTER* Button. The *ENTER* button allows you to accept or select an option or a menu choice.

The *ESCAPE* or *QUIT* or *BACK* Button. The *ESCAPE* (or *QUIT* or *BACK*) button has a simple function: You use it to leave the screen you are on (and the functions you are using) to return to the previous screen and function. Pushing *ESCAPE* repeatedly scrolls you through the GPS receiver's various functions.

The *UP, DOWN, LEFT,* and *RIGHT* Buttons. The *UP*, *DOWN*, *LEFT*, and *RIGHT* buttons usually are located on the face or side of a GPSr or within its screen displays. These buttons allow you to move around within your GPS receiver's various functions or menus to accomplish such tasks as naming, choosing, creating, editing, and deleting waypoints, routes, landmarks, etc.

The *MARK* Button. *MARK* is a useful function key that records where you are—data the GPS receiver will store, variously, as positions, fixes, landmarks, or waypoints. To mark a position accurately, your unit needs satellite contact. This means you need to be outdoors with a clear view of the sky.

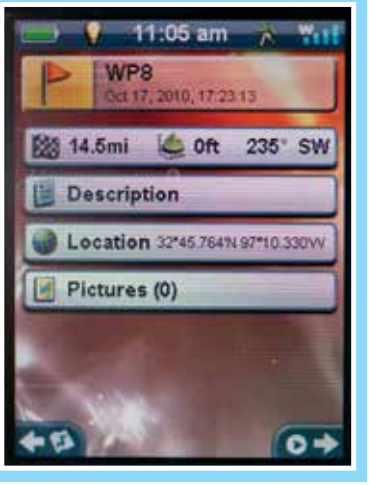
The *ZOOM* Buttons. The *ZOOM* buttons allow you to zoom in or out while viewing the map screen. Usually a map will display finer levels of detail the more you zoom in on it.

The *MENU* Button. The *MENU* button displays a list of options for functions and configurations that usually allow for customizing the GPS receiver.

The *GOTO* or *FIND* Button. The *GOTO* or *FIND* button lets you search your programmed waypoints or geocache locations that are stored in the GPS unit's memory. This function may give you the option to display the listings alphabetically or by the listing nearest your current location.

A *waypoint* is a location recorded in a GPS receiver. Waypoints are extremely useful as you set out in search of a geocache and as you return home.

- Pencil your route on a topographic map. (See "Using Your Map and Compass" in the next section.) Mark several waypoints—trail intersections, stream crossings, hilltops, etc. Determine the coordinates of the waypoints and enter those coordinates into your GPS receiver. Then bring up the waypoints on the GPSr screen as you travel. These will guide you along your route.
- During a trip, stop at recognizable landmarks (a large tree, a cabin, a bridge, etc.) and use your GPS receiver to determine your location. Program that spot into the GPS unit's waypoint memory. On your return journey, those GPS waypoints will provide guidance so you can find your way even if visibility is poor or your memory of the route is unclear.



Using a Garmin eTrex®

With so many different kinds of GPS units available, it is impossible to describe how to program and use each brand and model. This section details one basic model that is a common entry-level unit for geocaching and other outdoor use.

Units like these handheld GPS receivers work well for the beginner geocacher. There are many others, so do your research and shop around to find the one that meets your needs and fits your budget.

Directions for the Garmin eTrex®

1. **Turn it on.** The *POWER* button is on the right side of the unit. Be sure you have installed good batteries.
2. **Locate the *ENTER* button and the *UP* and *DOWN* buttons** on the left side. These are used to change the menus and screens.
3. **Push the *PAGE* button repeatedly** to get to the "menu" page. The *PAGE* button is on the right side of the unit.
4. **Press the *DOWN* button** and highlight *WAYPOINTS*.
5. **Press *ENTER*.** The "waypoints" page appears.
6. **Press *ENTER*** and the highlight should move to a waypoint. You may need to enter a few waypoints if your unit is brand new. You can do this using the "mark" function. Read your unit's instruction manual for more information on your specific unit.
7. **Press *ENTER* again** and then highlight *GOTO*.
8. **Press *ENTER* again** and the "pointer" page should appear for the waypoint.

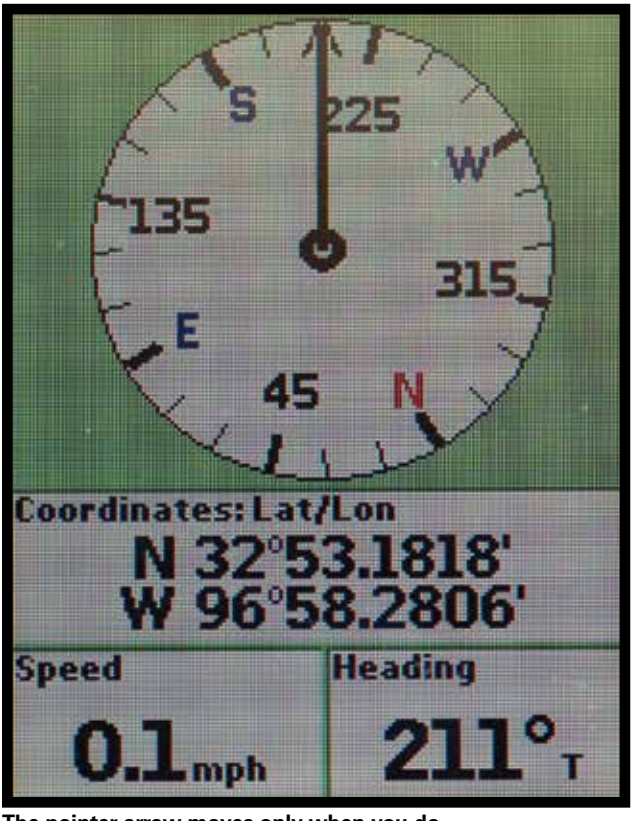
Not all units come with preprogrammed waypoints.

The screen should have the waypoint's name or number at the very top. The default waypoint "name" is a number—001, 002, etc. Waypoints are numbered in the order they are marked. The numerical designation can be changed, if desired, to letters or words: CAMP, LAKE, CABIN, etc.

Immediately below the waypoint's name or number, you will see the distance to that destination, given in feet or miles. Below that, a compass ring should be displayed with an arrow pointing in a particular direction.

You may be able to set up your GPSr so that it provides an estimated time of arrival.

You then follow the arrow and change direction as it changes direction. **The arrow will change direction only when you begin moving.** This is important. If you are standing still, the compass arrow will not be pointing in the correct direction. You must move at least 10 to 20 feet before the arrow will swing around to the correct direction of travel. At that time, you start walking the way the arrow points until the distance gets close to zero.



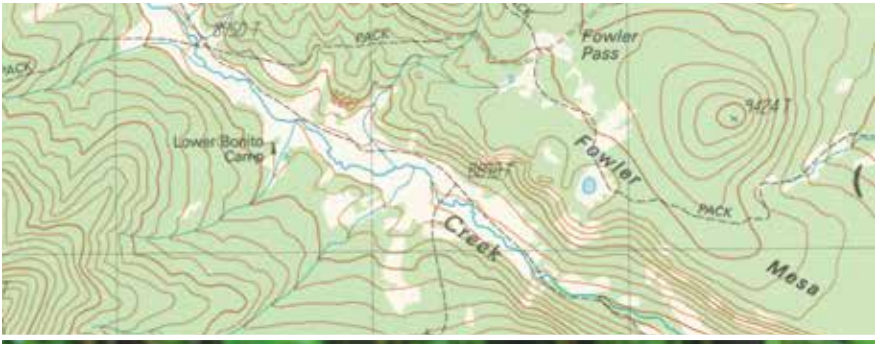
The pointer arrow moves only when you do.

Many GPS units do not have a built-in electronic compass. A GPS receiver's compass will *not* point north like a magnetic compass. The GPSr can only determine your direction of travel by comparing your calculated location with the location just calculated a second ago. In other words, the compass will not display the correct direction of travel *until you are moving.*

Some units require you to hold the GPS unit just like you would hold a regular magnetic compass, level and with the top of the GPS receiver pointing straight ahead (see the picture). Otherwise it will think it is going backward. Check the manual. When the arrow is pointing straight ahead, you are on the correct track.

At some point the arrow may begin to flip, first one direction and then another. This means you are close to your destination. At this point, ***stop moving and start hunting.*** Use your eyes and brain instead of your GPS receiver.

Your GPS unit will only get you so close. The rest is up to you. The hunt is the exciting part of the game, because YOU are required to do the final search and discovery.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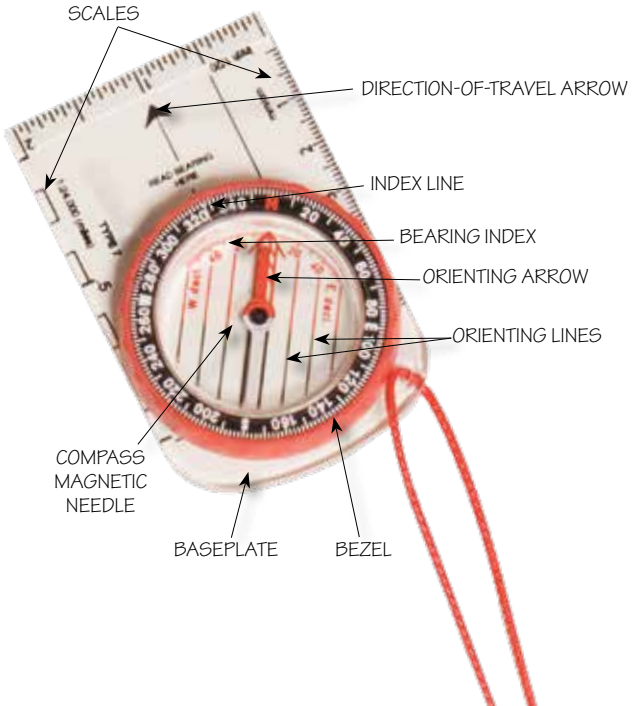
Using Your Map and Compass

Why do you need to know how to use a map and compass when the GPS receiver's arrow tells you where to go? **Because your GPS unit can—and will—fail, and it won't tell you what is between you and your objective.**

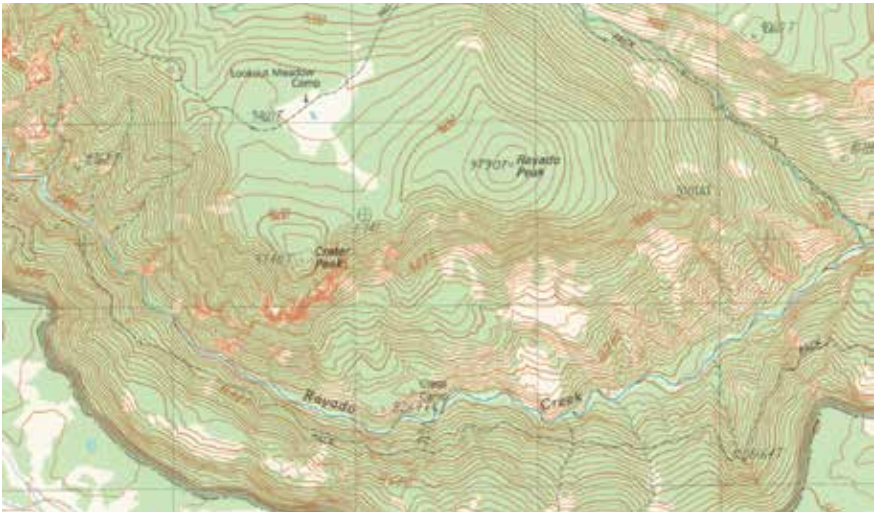
Many things can go wrong. Your batteries may die. You may be in a location where you can't get good satellite reception. Heavy tree cover, nearby power lines, tall buildings, a narrow canyon—all of these can reduce your satellite reception to such an extent that your GPS unit simply does not work. Or you might accidentally program in the wrong coordinates and be heading in the wrong direction entirely.

Carry a map and compass and know how to use them, especially if you are out in the wilderness. See the Scouts BSA handbook and the *Orienteering* merit badge pamphlet.



Topographic Maps

Remember, the GPS unit is only going to tell you how far you need to go and in what direction. It is not always going to tell you about the obstacles that may lie between you and your destination. Can you imagine the frustration and disappointment after a three-mile hike when you find yourself 200 yards from a cache that sits on the other side of that swamp or hundred-foot gorge in front of you?



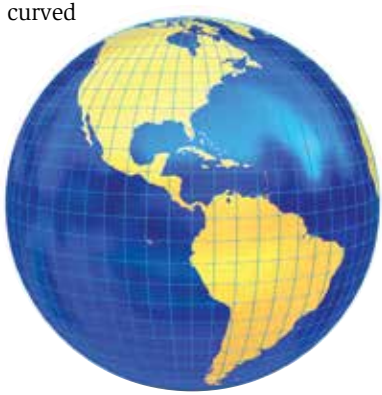
Topographic maps use contour lines to show elevation and colors to represent water, forested areas, roads, and other features. A map provides precise details and a large view of the area.

Using a topographic (topo) map of the area can help you plan your best route. Most GPS receivers today offer the option to upload topographic maps directly to the unit. If your device does not, you can find several sources online from which to print a map of the area. Sporting goods shops and camping stores also often sell topo maps.

A good topographic map, or quadrangle map, is needed in the backcountry, just as a street map is essential in the city. What about that freeway that runs between you and the cache? For the best route, look at the big picture.

The Latitude/Longitude Coordinate System

A convenient way to describe a position on Earth's curved surface is with the system of reference lines called *parallels of latitude* and *meridians of longitude.* You are probably familiar with a standard globe representing Earth and with the series of lines on the globe that show latitude and longitude.



Most GPS receivers come out of the box preset to use latitude/longitude (lat/lon) coordinates. Therefore, most new GPS users start out using lat/lon coordinates and need to understand how to relate those coordinates to points on a map.

Latitude

Lines of latitude circle the globe in a horizontal direction and measure north-south position between the poles. The equator is defined as 0 degrees, the North Pole is 90 degrees north, and the South Pole is 90 degrees south. Lines of latitude are all parallel to each other and are often referred to as parallels.

Longitude

Lines of longitude, or meridians, run vertically, dividing Earth into segments that meet at the North and South Poles. Meridians measure east-west position. The prime meridian, which runs through Greenwich, England, is assigned the value of 0 degrees. Meridians to the west of the prime meridian are measured in degrees west; those to the east of the prime meridian are measured by their number of degrees east.

To show precise locations, each degree of longitude and latitude is divided into 60 minutes, and each minute of longitude and latitude is divided into 60 seconds. Here are the symbols used for units of measure:

° = degrees ' = minutes " = seconds

A position on the globe is stated latitude first, followed by longitude. For example, the coordinates of latitude and longitude for the summit of Baldy Mountain in New Mexico may be given as 36°37'45" N, 105°12'48" W.

Common Formats

For expressing latitude and longitude, here are the three most common formats:

DDD° MM' SS.SS"	Degrees, minutes, and seconds
DDD° MM.MMMM'	Degrees and decimal minutes
DDD.DDDDD°	Decimal degrees

Degrees and decimal minutes **(DDD° MM.MMMM')** is the format most commonly used with GPS devices and is the format used by default on geocaching.com, which shortens the format to DDD MM.MMM. In this format, the coordinates of the Scouting America national office are N 32° 53.137', W 096° 58.218'.

Degrees, minutes, and seconds **(DDD° MM' SSS")** is the most common format used to mark maps. In this format, the Scouting America national office is at 32° 53' 08.27" N, 096° 58' 13.13" W. This format can be cumbersome to work with; just remember that it is similar to telling time.

There are 60 seconds in a minute 60" = 1'
There are 60 minutes in a degree 60' = 1°

Decimal degrees **(DDD.DDDDD°)** is the format that most computer-based mapping systems display. Often the N-S and E-W designators are omitted. Positive values of latitude are north of the equator; negative values are to the south. Most often, negative values for longitude indicate a west longitude; a positive value is an east longitude. In the decimal degrees format, the Scouting America national office is located at 32.88563 -096.97031.

Be mindful of a few simple conversions between seconds and decimal minutes when working with maps that use degrees, minutes, and seconds:

- 15 seconds is one-quarter minute or 0.25 minutes
- 30 seconds is one-half minute or 0.5 minutes
- 45 seconds is three-quarters of a minute or 0.75 minutes

Coordinates for Scouting America's national office in Irving, Texas, are N 32° 53.137', W 096° 58.218'.

Most GPS receivers have a simple setting to switch between various coordinate systems.

Which Format Should You Use?

You can set a GPS receiver to display any one of these three formats. Locations can be entered into the GPS unit with the selected format, and then by switching the position format setting, you can view the coordinates in the different format.

If your main GPS activity will be geocaching, then *degrees and decimal minutes* will be your preferred format. But if you are teaming up with other people who have agreed to use a different format, then you should probably use that format.

You will also want to look at the maps and lists of coordinates you are using. If you find a consistent format among them, using it will make your location-finding easier. Select a position format that matches the method in which your map coordinates are measured.

Geocaching and the Internet

Since the first geocache in May 2000, the internet has played a major role in the sport. Several websites offer information about geocaching, and you can search for a wide variety of public geocaches. Just remember that no one controls the information put onto the web. Much of what you see posted there may be incorrect or misleading. You should always consider the source of the information to help you evaluate how accurate it might be.

Basic Internet Safety

Internet use has its risks and requires common sense as well as a parent or guardian's permission. Follow these guidelines *and* use your noggin!

1. **Follow your family's rules for going online.** Respect any limits on how long and how often you are allowed to be online and what sites you can visit. Do not visit areas that are off-limits. Just as there are places you don't go to in real life, there are places to avoid on the internet.
2. **Protect your privacy.** Never exchange emails or give out personal information such as your phone number, address, last name, school, or where your parents or guardians work and their phone numbers, without first asking permission. Do not send anyone your picture or any photographs unless you have your parent or guardian's permission.
3. **Do not open emails or files you receive from people you don't know or trust.** If you get something suspicious, trash it just as you would any other junk mail.
4. **If you receive or discover information that makes you uncomfortable, leave it and tell your parent or guardian.** Do not respond to any message that is disturbing or hurtful.

5. **Never agree to get together with someone you "meet" online,** unless your parent or guardian approves of the meeting and goes with you.
6. **Never share your internet passwords with anyone** (even if they sound "official") other than your parents, guardians or other responsible adults in your family.
7. **Never shop online unless you have your parent or guardian's permission to do so.**
8. **Do not believe everything you see or read online.** Along with lots of great information, the internet has lots of junk. Learn to separate the useful from the useless. Talk with your parent or guardian, merit badge counselor, or an experienced web user about ways to tell the difference.
9. **Be a good online citizen.** Do not do anything that harms others or is against the law.

Be careful who you communicate with online. People online may not be who they say they are. For instance, an adult could be posing as a kid.

Google Earth or Google Maps

"Following the arrow" on a GPS receiver may add "high tech" to a geocaching adventure, but another piece of technology lets you geocache even if you don't own a GPS unit. Google Earth and Google Maps allow you to put in coordinates and then zoom in for a detailed satellite view of the location. Using this technology, along with a description of the cache and other clues, is often enough to find a geocache. You can almost see the exact bush the cache is hidden under.

Using Google Earth or Google Maps is a novel way to combine geocaching with map skills. You can use both a detailed topographic map and a Google Earth map to bring the map symbols alive in a fun way.

Geocaching With a Twist

Here are some different types of GPS-related activities and the websites where you can find more information.

Letterboxing (letterboxing.org) is a form of treasure hunting that uses clues to direct the seekers to a hidden container. Each container has a unique stamp that you use to mark your logbook, and you leave your own unique stamp in the letterbox logbook. Letterboxes may also be geocaches (a letterbox-hybrid cache). The coordinates of some letterbox-hybrid caches take you to a spot where clues to the final container may be hidden or will become obvious ("under the second big tree to the west of where you are standing," for example). A common mistake is for geocachers to think the stamp is a trading item; it is not. Leave the stamp in a letterbox-hybrid cache.

Waymarking (waymarking.com) involves posting the coordinates of places that you may want to visit in specific categories. The website is also a tool for adding information about that location.

Wherigo® (wherigo.com) combines an adventure game with a geocache search. The website includes tools to build location-based game "cartridges" (interactive tours, adventure games, puzzles) on your computer that can be played with a Wherigo-compatible GPS unit. You physically move from one location to the next to advance the story, then log the results at wherigo.com and geocaching.com.

EarthCache™ (geosociety.org/earthcache) provides information on locations people can visit to learn about a unique geoscience feature or aspect of our planet. Visiting EarthCache sites will show you how our planet has been shaped by geological processes, how we manage the resources, and how scientists gather evidence to learn about Earth.

Navicache.com is a geocaching website with rules and an audience slightly different from the popular geocaching.com website.

Geocaching.com

Geocaching.com is the most popular website for the public sport of geocaching. The site lists more than three million active caches and has millions of users worldwide. Basic membership is free. For a small yearly fee, you can get the bonus features of a premium membership.

While all of the site's pages are informative and worth exploring, the "Geocaching 101" pages at geocaching.com/guide are must-reads for beginning geocachers. Note that all caches posted on geocaching.com must adhere to the guidelines of Geocaching HQ. This includes where the cache is hidden, as well as what geocachers can and cannot say in their public postings. Volunteer reviewers ensure that caches are hidden according to the rules, and follow up on any issues with a cache. (Guidelines for public geocaching are covered in more detail in the next chapters of this pamphlet, "Getting Started With Public Geocaching" and "Setting Up Your Own Geocaches.")

Getting Started With Public Geocaching

Are you ready to find a cache? Before you go search for it, you need to prepare. Geocaching.com lists four basic steps to finding your first public geocache. The four steps are summarized here; more details are available online.

For your first geocache hunt, choose one that has a difficulty and terrain rating (D/T) of 1/1. Start with an easy-to-find cache so you can learn how geocaches are placed.

Step 1—Research

At geocaching.com, register for a free basic membership. Then click "search." To locate the geocaches nearest you, enter your city and state and click "search."

The list that appears will give you information on how far away a cache is, what type it is, how difficult it is to find, and how difficult the terrain is (how hard the cache is to get to). Choose a geocache from the list and click on its name.

Enter the coordinates of the geocache into your GPS device. Also study maps of the area. You will need the right maps to help you search. If you choose an urban cache to hunt for, a road map may be all you will need. For a rural cache, however, you may need a topographical map that will tell you what terrain you will encounter.

Read the owner's manual to learn how to manually enter coordinates into your GPS device. Or ask an experienced GPS user to show you how.

Step 2—Safety

Before you head out, be sure to tell someone where you are going and when you expect to return. Use the buddy system.

Pack your pack. Bring a personal first-aid kit, a compass, maps, and extra batteries for your GPS receiver. Bring water. It is always a good idea to pack along food and extra clothing, too.

Step 3—The Hunt

Your starting point may take you beyond walking distance. If you must drive to the location, as you leave your car or a well-marked trail or trailhead, be sure to mark its location as a waypoint. Once you are focused on the hunt for the cache, you can easily get disoriented. Mark your starting place as a waypoint to guide your return.

Use your GPS device to help you find the hidden geocache. From the research you did before you set out, you should know the best approach for getting near the cache location. When you get within 300 feet or so (the length of a football field), check your GPS receiver's signal strength and accuracy. The accuracy may be low. As you get closer to the final location, don't rely too much on the GPS receiver's pointer arrow. Concentrate more on the overall distance decreasing.

During the hunt, pay attention to your surroundings. It's easy to focus on your GPS receiver and forget to look around. Be conscious of where you are walking, both for your own safety and to respect the environment. Be mindful of potential hazards such as poisonous plants or venomous animals that may live in the area.

When you get close to a cache, it's time to take a good look around. The cache might be so "easy" to find that you walk right past it.

The final 30 feet to 100 feet can be the most difficult. At this stage, look around for likely hiding spots. Remember: A cache may be cleverly hidden and camouflaged.

Step 4—The Actual Find

You've found it! But you're not done yet.

Sign the cache's logbook with your name or "handle," the date, and a few words about your experience. Along with the logbook, caches often have "swag" inside—prizes to be traded. If you trade for items, the proper etiquette is to leave an item of at least equal value to what you take. Remember, Scouts always leave it better than we find it!

Use the waypoint you created to guide your return. When you get home, log your visit online by going back to the cache's page at geocaching.com. Share your geocaching stories. The cache owner will enjoy hearing about your adventure, the condition of the cache, and any special challenges you may have met along the way.

Geocaching Etiquette

- Practice Cache In Trash Out (CITO). Always carry a trash bag and remove litter along your route.
- Follow Leave No Trace guidelines in the natural environment.
- Be careful of the area around the cache—don't trample the grounds, rip up sprinkler heads, etc., in your frenzy to find the cache.
- Follow all laws and regulations. Never enter private property without permission.
- Write an entry in the logbook at the cache.
- Cache items are there for fun and for trade. Try to leave something of equal value to what you take for yourself.
- Respect other visitors around the area.

More Tips on Using Geocaching.com

Once you have typed in your city and state at geocaching.com, you will find a variety of caches near you. Click on any of the links, and if you have your basic membership you will see not only the coordinates for that cache displayed, you will also get other useful information, such as:

- The **name** of the cache. Each cache has a name, which is searchable, as well as a unique identifier code, usually starting with GC followed by a series of numbers and letters. Names can be hints in and of themselves. The name might also use Scouting terms for instant Scouting recognition.
- The **size** of the cache. Geocaches can be any size and any shape. It often helps to know this ahead of time to guide your search.

Be sure to reseal the cache container and put it back exactly where and how you found it. Replace any rocks, sticks, or other camouflage you may have moved.

Nano caches are tiny and they often have only a strip of paper for a log. Be polite and don't fill the entire strip with your signature! These are officially listed online as *micro* caches but the description or hint will often tell you to look for a tiny *nano* cache. *Micros* are often film-canister size. *Small* caches (typically a sandwich-sized plastic container) can hold a few smallish trade items or Travel Bugs (see "Trackables," below). *Regular* caches (shoebox-sized) are large enough for prizes and most Travel Bugs. Occasionally you will find a *large* cache (the size of a five-gallon bucket), which can hold very big items.

Types of Caches

The many types of caches include the following.

Traditional. This is an ordinary "hide" with a single cache found at the given coordinates. In its simplest form, a traditional cache consists of a container and logbook.

Multi. As the name implies, this type of cache has more than one part. You may find the coordinates of the second cache in the first, the coordinates of the third cache in the second, and so on. Or they may all be listed in the cache description. This type of cache often leads you on a trail to different interesting places.

Multis are great for use in Scouting games.

Mystery or Puzzle. The actual cache is not at the coordinates that are listed on the website. Instead, there is a puzzle that must be solved. Some puzzle caches require a lot of research. They can be extremely challenging, whereas others are more straightforward. All of them keep a Scout "mentally awake."

Virtual. A virtual cache does not have any container to find. It exists in the form of a location that you visit, find out information, and send that information to the cache owner to log (get credit for) the find. These can no longer be created other than on the waymarking.com site, but some old virtual-cache sites make for great Scouting visits.

Wherigo®, letterbox, and EarthCache™ are discussed in "Geocaching and the Internet" earlier in this pamphlet.

Event (regular, mega, or giga). Events are gatherings set up by local geocachers and geocaching organizations to meet players and to discuss geocaching. Attending an event that is posted on geocaching.com counts as a "find."

CITO. A Cache In Trash Out (CITO) type of service event also counts as a "find."

Other Information

The geocaching.com listing for a cache may also include the following information:

Difficulty. How hard is the cache to find? This scale is from 1 (very obvious) to 5 (very devious).

Scouting America recommends that Scouts do not go after caches that have a terrain rating higher than 3.5, unless an adult has checked the cache ahead of time for age-appropriateness and safety.

Terrain. How hard is it to get to? A rating of 1 means the cache is reachable by wheelchair; a rating of 5 usually means that special equipment or expertise will be required.

Attributes. Attributes give additional information, such as what is permitted in the area (whether dogs are allowed, for example), any special equipment needed, what to watch out for, and other details. Are the facilities wheelchair accessible? Can you camp nearby? Are there thorny bushes? Look for this information before you begin to search for a cache (and don't forget to list attributes when you place a cache for others to find).

Description. Often you can learn useful information about the location through the description of the cache. This is also a way to tell others about your troop or Scouting experiences *as long as you are careful not to violate the "no soliciting" rules*. You can't advertise for troop members, or ask for money, or post links to other Scouting websites such as your troop's home page.

Short hike

Special tools required

Clue or hint. Many caches include a clue or hint, which you may or may not want to decode. If you hide a cache (see the next chapter, "Setting Up Your Own Geocaches"), you should always give a hint even if the location seems easy to you. Ask yourself: Do you want people to find your cache? Nothing is more frustrating than a long hike, with a GPS receiver that won't settle down, only to be thwarted at the last by a hint that reads: "Too easy for a hint."

Try decoding this hint:
N FPBHG VF URYCSHY!
Decryption Key (substitute each letter for the one above or below it)

```
A|B|C|D|E|F|G|H|I|J|K|L|M
N|O|P|Q|R|S|T|U|V|W|X|Y|Z
```

Trackables

A trackable is anything with a tracking number or other identifier that can be followed as the item travels from cache to cache. Trackables are cool for Scouts to find and release (and they're good for informing the public about Scouting America). Several trackables have their own websites.

PathTags (pathtags.com) are small metal coins for trading and sharing. Each has a unique number that can be tracked on the PathTags website.

Travel Bug

Geocoins and **Travel Bugs** are the main trackable items at geocaching.com. Travel Bugs are like dog tags with a unique code that you can attach to any item of your choice. At geocaching.com, the coins (geocoins) and Travel Bugs each have a page with the object's "mission," or what the owner wants to have happen with the traveling object. Both log miles traveled, and each time an object is moved from cache to cache, the person who moves it posts a note about it on the geocaching.com site.

Setting Up Your Own Geocaches

When you place your own caches, it is important to follow the rules. "Be prepared" by reading and understanding the guidelines at geocaching.com/play/guidelines before you hide your cache. The guidelines cover the safety rules as well as environmental concerns. Geocaching.com has a quick guide to hiding your first geocache (geocaching.com/play/hide). More information is available at the site's Help Center: (geocaching.com/help).

Think about what people might do when searching for your cache. You don't want the public tearing up gardens looking for that fake sprinkler head. This is one reason you never bury a cache. Since the accuracy of a GPS receiver never gets you to the exact spot (ground zero), too many holes would be dug searching for a container.

A muggle is someone who doesn't know about the sport of geocaching. When you are looking for a public geocache, you want to be careful that people don't see what you are doing, as they might just take the cache. When someone has broken into a cache and ruined it, that is called "being muggled."

The Four Steps

Think of the four steps to finding a cache, and use those steps to guide you in hiding a geocache.

1. **Research.** Carefully research where you want to place your cache. Are there adequate places to hide your caches without risk to the environment when people are seeking them? Are there too many other caches nearby? Geocachers are encouraged to seek out new places to hide caches rather than put them where others already exist. Areas that are not suitable for geocaches include schools, government buildings, cemeteries, airports, military installations, or similar sites. Geocaches can only be placed at Scout camps if the location is on a portion of the property that is available to the general public to seek the cache.
2. **Safety.** Your cache must be in a location that is safe to get to. It's essential to get permission from the landowner or land manager, and to avoid placing caches anywhere the seekers might encounter danger. Don't put caches near busy intersections, near railroad tracks, on electric utility boxes, or up high in trees. Avoid places overgrown with poisonous plants.
3. **The Hunt.** Make sure geocachers can find your cache. Post a hint online. When you place the cache, can you get a good satellite signal so that you are posting accurate coordinates for others to follow? Also be sure your cache can easily be identified *as* a geocache. Write "Geocache" on the outside of the container. Consider using a clear plastic container so the contents are easily identifiable.

4. **The Actual Find.** Put your logbook in a waterproof bag along with a pencil and a note to welcome the cache finder. Preload the cache with enough prizes (small toys, perhaps, or trackable items) for the first few people to find. Geocaching is a family activity, and cache contents should be suitable for all ages. Do *not* include food items.

Submitting Your Cache

When you have your cache in place and you are certain it meets all the requirements for placement, log on to geocaching.com and fill out the online form on the "Hide a Geocache" page at geocaching.com/play/hide. Write a description and add descriptive attributes to tell others about your cache.

Before your cache is posted on geocaching.com, a volunteer will review the cache to make sure the GPS coordinates are correct and it meets the requirements for listing. If your cache passes review, it will be posted for the general public to seek.

Remember, a Scout geocacher who doesn't follow the rules and etiquette of the sport risks tarnishing the reputation of all Scouts.

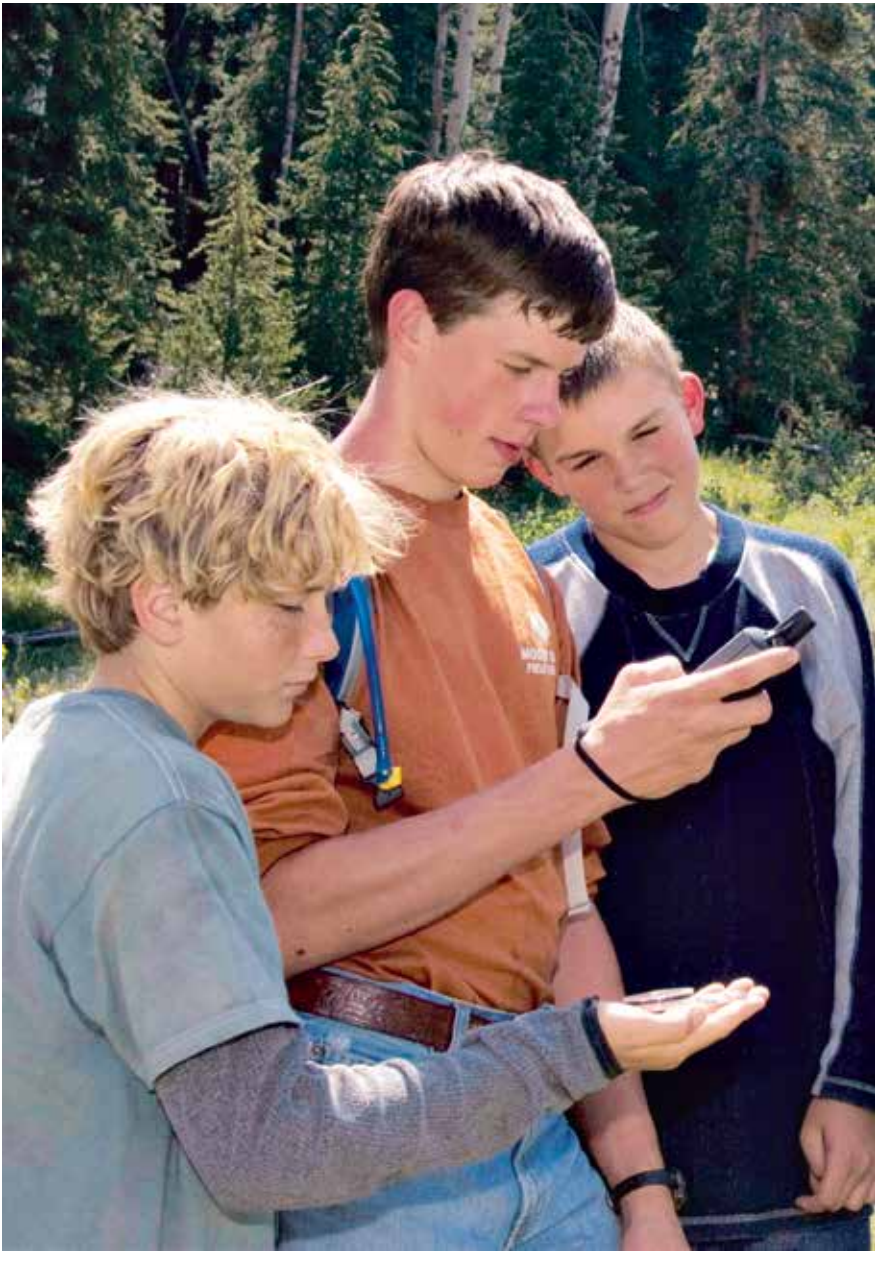
Maintaining Your Cache

Once you place a public geocache, you have an obligation to maintain the cache and the area around it, for as long as it is active. Monitor the online logs that are sent to you, the cache owner, and act on any reports that your cache needs maintenance. You will need to return to the site as often as you can to check that the container is in good condition and to be sure visitors to your cache are not harming the area.

Does the area look disturbed? Are visitors damaging the landscape? If so and you need to change the cache's location, be sure to also change your online listing.

Dismantling a Cache

Geocaches should not be placed unless you can actively maintain them for at least three months. If you find you can't or don't want to maintain your geocache longer than three months and do not have another geocacher to "adopt" the cache for you, you need to remove it. This includes physically removing the cache container and any litter that may be around your hiding spot. Be sure to leave the location exactly as it would have been without a geocache. You also need to go online and "archive" your cache listing.



Geocaching and Your Troop

To fulfill requirement 9 for the Geocaching merit badge, you are to organize a geocaching game for a youth group such as your troop or a Cub Scout pack, and you must teach the players how to use a GPS unit. Here are some tips you may find helpful.

Teaching GPS Use to Your Patrol or Troop

All Scouts from Tenderfoot to Eagle Scout rank can use a GPS unit and geocache. Younger Scouts may need help programming a GPS receiver, but older Scouts can program the units themselves, or play games that require solving challenging puzzles. You know your troop, so use the skill level that is right for each member or patrol.

Remember to use the Scouting EDGE. National Youth Leadership Training (NYLT) and the National Advanced Youth Leadership Experience (NAYLE) both use a GPS-based activity to illustrate the Scouting EDGE.

- ***E***xplain how it is done.
- ***D***emonstrate the steps.
- ***G***uide learners as they practice.
- ***E***nable them to succeed on their own.

Teaching GPS Use to Cub Scouts or Younger Children

All ages of Cub Scouts can also use a GPS unit to geocache. Younger children love to follow the arrow and are thrilled when they make "the find." However, they may not be able to program a GPS receiver. It is best to have all the waypoints preloaded into each unit and to have the units already set to the compass screen so all the Scouts have to do is walk and learn to look at the distance remaining and the direction.

Younger children will also require very easy finds with an actual prize in the box. They are prone to boredom if the event lasts longer than 45 to 60 minutes. Older Cub Scouts like more challenge and can often change the GPS unit from one waypoint to another by themselves, or play games that require solving simple puzzles.

Match the skill level to the age of the Cub Scouts and the size of the group. Be prepared to travel with the Cub Scouts as they search for the cache, or keep the distances short so you can watch their progress. Even the youngest Scouts can appreciate a themed game.

Geocaching and Scouting

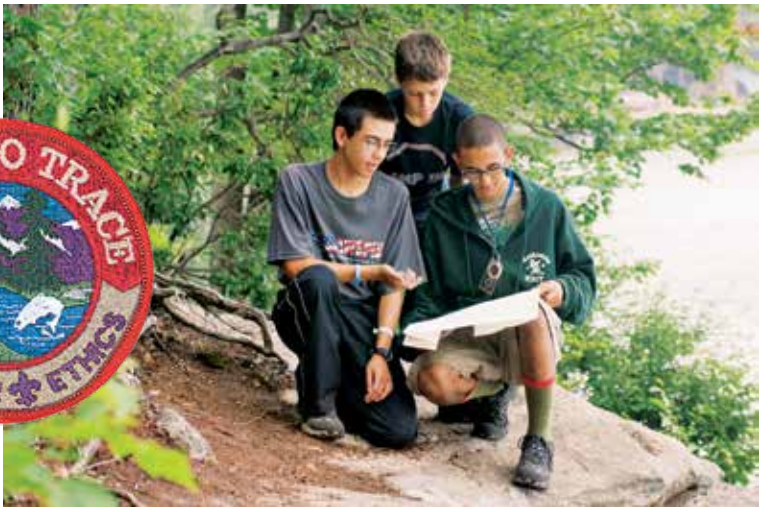
You will discover many ways to use the sport of geocaching with your patrol or troop. Use geocaching to make your troop meetings more exciting, to showcase Scouting to the public, and to do service events with a high-tech twist. This blending of geocaching and Scouting is a rapidly expanding program with many resources to help you and your troop. Here are two ways you can use geocaching in your troop:

- **Make rank advancement fun.** You can theme a geocaching game around rank requirements or the path to Eagle.
- **Recruit new members.** How do you get your non-Scouting friends to want to join Scouting? By showing them how much fun your troop is! You can use geocaching to recruit new members. These may be Webelos Scouts who are looking at which troop to join, or they may be youth who are old enough for Scouts BSA but are not yet in the program. Many schools and churches would love to have you organize a geocaching activity for their members, and those members may end up wanting to join your troop.

How to Plan and Run a Geocaching Game

When setting up a game, consider the following steps.

1. Plan ahead. Decide what the game is for, who will take part, where it will be, what safety precautions must be followed, what you need to set up the game, and how you will clean up after the game.
2. Get any permissions that are needed, including permission slips for the youth participants, permission from the property owner, and the permission of your senior patrol leader, Scoutmaster, or troop committee.
3. Set up the game ahead of time. Design and load the appropriate number of cache containers for your game, and hide them before people arrive.
4. Have clear rules and objectives for your game. Be sure each participant understands the safety rules and the principles of Leave No Trace.
5. Play the game!
6. Afterward, debrief the activity (that is, explain what the game was about).
7. Clean up the area and be sure to pick up all cache containers from their hiding places.



Geocaching and Leave No Trace

Be sure to read about Leave No Trace in your Scouts BSA handbook before you begin to geocache.

Leave No Trace is a basic Scouting ethic. You learn to follow Leave No Trace principles in all that you do in the outdoors, from hiking to camping to geocaching.

As long as geocaching is done responsibly, Leave No Trace is a natural fit with the sport. To ensure that you minimize your impacts when geocaching, follow the seven Leave No Trace principles. (The following information has been adapted from the Leave No Trace Center for Outdoor Ethics and is reprinted here with permission.)

Leave No Trace—Outdoor Ethics for Geocaching*

1. Plan Ahead and Prepare

- Know and comply with the geocaching policies of the landowners or land management agencies where you wish to seek or place caches.
- Prepare for your trip with proper equipment and clothing for the weather, terrain, and environmental conditions, and for emergencies.

*The member-driven Leave No Trace Center for Outdoor Ethics teaches people how to enjoy the outdoors responsibly. This copyrighted information has been reprinted with permission from the Leave No Trace Center for Outdoor Ethics: lnt.org.

- Be safe. Let someone know where you will be going and when you expect to return.
- Know how to use your GPS unit. Carry extra batteries and have a map and compass as backup.

A plan is important for any Scouting outing. Know where you are going and let someone else know, as well. Always go with a buddy. Watch out for the weather, and dress accordingly. Take plenty of water. Always have an appropriate map and a compass to supplement your GPS receiver if signal reception deteriorates.

2. Travel and Cache on Durable Surfaces

- Travel on designated trails and roads. Comply with posted signs.
- If permitted and you must travel off-trail, choose durable surfaces such as rock, sand, gravel, and dry grass, and spread out to avoid creating new paths.
- Use maps to find a route that will minimize impacts. Note waypoints during your journey to assist you on your return trip.
- After you have finished searching for a cache, the area should look as though you were never there.
- Do not place a cache in sensitive locations such as fragile vegetation or soils, critical wildlife habitat, wetlands, lakeshores, alpine areas, or caves.
- Do not place a cache in protected areas such as designated wilderness areas or wild and scenic river corridors, or near historic and cultural sites.
- If you notice a path has started to wear in the vicinity of a cache, notify the cache owner to move the cache.

Always walk on established or designated trails and paths and watch out for park or private landscaping. No one likes to see "geotrails" that cut across a nice lawn or garden. When hiding your own caches, put them so they can be found without destroying the vegetation to get to them.

Why waste your time on a cache that has not been maintained or has gone missing, been moved, or been archived? Before you hunt for public geocaches, it makes sense to read the online logs first. (See "Getting Started With Public Geocaching.")

3. Dispose of Waste Properly

- *Cache In, Trash Out.* Carry an extra trash bag for trash, leftover and dropped food, and litter left by others.
- Use established bathrooms when available. If not available, deposit solid human waste in catholes dug 6 to 8 inches deep at least 200 feet from water sources, campsites, trails, and caches.
- Pack out toilet paper and hygiene products in a double plastic bag.

Never leave trash behind. Always carry a trash bag with you and practice Cache In Trash Out (CITO) each time you go geocaching.

4. Leave What You Find

- Preserve the past. Observe, but do not touch, cultural or historic structures and artifacts. Never use artifacts as cache items.
- Leave rocks, plants, and other natural objects for others to enjoy.
- Practice the "lift, look, replace" technique. If you lift a rock to look under it, replace it exactly as you found it.

Never destroy any natural setting, whether you are hiding or seeking a geocache. Don't cut branches or remove leaves to use for cache materials or to hide caches. Don't place caches in locations that may cause others to disturb the natural setting when searching for them. A good clue can go a long way to avoid damage to the wrong "container."

5. Minimize Campfire Impacts

If you plan to have a fire, know the fire regulations and current guidelines for the area you plan to visit. (This is not often relevant for geocaching, but it's good to remember.)

6. Respect Wildlife

- Observe wildlife from a distance. Do not follow or approach animals.
- Never feed wild animals. Feeding wildlife damages the animals' health, alters natural behaviors, and exposes animals to predators and other dangers.
- Protect wildlife and your food by storing rations and trash securely.
- Never leave food of any kind in a cache. Wildlife may find and destroy the cache, and animals may be harmed by consuming food wrappers.
- Respect wildlife when traveling to and from cache locations. Avoid locations with significant wildlife traffic, such as water sources.
- Keep pets on a leash for their safety and the safety of wild animals. Consider leaving pets at home.

If you encounter wildlife while geocaching, leave it alone and use proper precautions. The same holds true with people's pets or livestock. Leave them be.

7. Be Considerate of Other Visitors

- Be courteous. Yield to other users on the trail.
- Take breaks on durable surfaces away from the trail.
- Let nature's sounds prevail. Avoid loud voices and noises.
- Respect the rights and experiences of other visitors. Geocaching is only one of many outdoor recreational activities.
- Don't trespass. When traveling to and from caches, take notice of private property signs.
- Practice the principles of Leave No Trace. The future of geocaching lies in the hands of geocachers.

Use the same courtesy when geocaching that you would show during any other Scout activity. Don't run, yell, or shout.

Geocaching Rules in Parks and Open Spaces

Many parks and open spaces have special rules for geocaching. With limited exceptions, no geocaches are allowed in national parks or national wildlife refuges. State parks and open-space districts often allow geocaches but expect the public to follow Leave No Trace principles when hiding or finding them.

Land managers may have special rules, like an increased distance between caches or a mandatory shorter time that a public geocache can remain active. This is to prevent permanent geotrails from developing. Contact park, open space, or land manager personnel to get permission before hiding any geocaches on public or private land.

Geocaching and the Public

Scouting America information may be shared with the public in many ways. You can set off Scout-related Travel Bugs with a "mission" that describes some aspect of Scouting America program or your troop. You can set up public geocaches that are related to your troop. Although you cannot advertise for Scouting in your online postings, you can talk about the fun activities that your troop does.

Cache to Eagle®

You can visit or set up caches, called "Cache to Eagle®" geocaches, at the sites of Eagle Scout service projects. (Cache to Eagle® has been rolled out nationwide and was a part of the 100th Anniversary Get in the Game! activities.) When Cache to Eagle geocaches are posted on the internet, other geocaching enthusiasts read about our Eagle service projects and go to visit them in person. This is a great way to let people know how much service Scouts provide to the community.

Cache In Trash Out (CITO)

The Cache In Trash Out program gives geocachers a way to repay the public parks and other locations that have allowed us to place geocaches on their property. The easiest way to use CITO is to simply carry a trash bag with you whenever you geocache and use it to clean up the areas where the caches are located.

You can even make small containers with trash bags inside them to leave in geocaches. These containers move from cache to cache. People pick up the container, use the bag inside to clean up the immediate area, and then replace the bag with a clean one from home and drop off the container at the next cache they find. Old film canisters make great CITO containers. You can create custom-decorated CITO labels for the containers by yourself or with your patrol or troop.

You can also hold a larger community CITO event—a community service project in which public geocachers work side by side with Scouts. Work with an agency or a community organization to decide on a good service project. Then create an event listing on geocaching.com.

Scouting provides service to the community. Geocaching-related programs may be used in many ways to help with service events.

TROOP
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First Aid and Managing Risk

Geocaching is not an inherently dangerous sport. As with all Scout activities, however, a little planning and common sense will help keep you and your geocaching friends safe.

Managing Risk

Here are a few guidelines to help you manage risk along the way.

Use the buddy system. As described in the Scouts BSA handbook, this is part of Tenderfoot rank requirement 9. When you geocache with a buddy, you not only watch out for each other, you also have more eyes to spot the cache!

Plan ahead. All activities run more smoothly with a plan. Know where you are going and what to expect. Read ahead about any public geocaches you may be searching for, and be sure to let someone know where you are going and when you plan to return.

Watch the weather. Whether you are geocaching, hiking, or just outdoors for some reason, you need to avoid dangerous weather situations such as lightning storms. Dress appropriately and take plenty of water along on any geocaching activity.

Weather Watch

Always be alert to the weather. The National Weather Service says if you can hear thunder, you are close enough to the storm to be struck by lightning. During thunderstorms, take these precautions.

- Avoid open areas and lightning targets such as trees, flagpoles, or wire fences.
- Avoid contact with anything metal, such as metal-framed backpacks. In tents, stay away from metal tent poles.
- If you are near a mountaintop, get downhill. If a storm catches you, take shelter in a cave or low spot in an area that is not likely to flood.
- Take shelter in a steel-framed building or hard-topped motor vehicle (not a convertible) if you can, and avoid touching the metal parts. Avoid water, and avoid using or any contact with electronic devices such as GPS receivers, mobile phones, and computers.
- If you cannot find shelter, *get small.* Do not lie flat on the ground, which makes you a larger target. Instead, crouch low with only the soles of your shoes touching the ground, and at least 100 feet from your companions. If you have one, use your sleeping pad for insulation by folding it and crouching upon it.

Personal First-Aid Kit

The items you carry in your first-aid kit will handle most of the medical problems you are likely to encounter while geocaching. Common injuries such as blisters, scrapes, scratches, and sunburn are not usually difficult to treat.

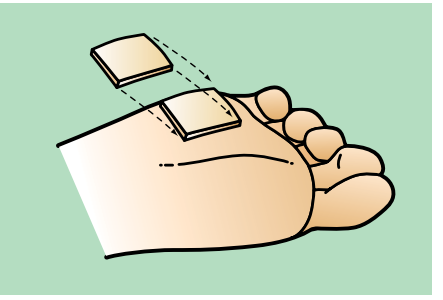
Pack these items into a self-sealing plastic bag to carry along when you're out-of-doors.

- ❑ Adhesive bandages (6)
- ❑ Sterile gauze pads, 3-by-3-inch (2)
- ❑ Adhesive tape (1 small role)
- ❑ Moleskin, 3-by-6-inch (1)
- ❑ Soap (1 small bar) or alcohol-based hand sanitizing gel (1 travel-size bottle)
- ❑ Triple antibiotic ointment (1 small tube)
- ❑ Scissors
- ❑ Nonlatex disposable gloves (1 pair)
- ❑ Mouth-barrier device
- ❑ Pencil and paper

For detailed information about first aid, see the *First Aid* merit badge pamphlet, the Scouts BSA handbook, and the *Fieldbook*.

Being First-Aid Prepared

When you are out geocaching, you should be prepared to handle some typical first-aid situations that may arise.



Blisters. Blisters on the feet are the most common injury for hikers. A "hot spot" signals the beginning of a blister. *Stop immediately* and protect the tender area by covering the skin with a piece of moleskin slightly larger than the hot spot. Blisters are best left unbroken. If a blister does break, treat it as you would a minor cut or abrasion. To prevent blisters, wear boots that fit properly and are broken in well. Keep your feet clean and dry; change your socks frequently.

Cuts and Scrapes. Treat a minor cut or scrape by flushing the area with clean water to wash out any foreign matter. Apply antibiotic ointment and cover with a dry, sterile dressing or an adhesive bandage. To help prevent cuts and scrapes, dress appropriately for the activity (long pants, a long-sleeved shirt, sturdy boots).

Sprains and Strains. If you sprain your ankle while hiking and you need to keep walking, leave your boot on to support the injury. Reinforce your ankle by wrapping it, boot and all, with a triangle bandage. To prevent a sprain, watch where you step. Don't get so absorbed in following the arrow of your GPS device that you fail to pay attention to where you are walking.

Insect Stings. To treat a bee sting, scrape away the stinger with the edge of a knife blade but don't squeeze the sac attached to the stinger—that might force more venom into the skin. For bee, wasp, or hornet stings, an ice pack may help reduce pain and swelling.

Tick Bites. Protect yourself in tick-infested woodlands and fields by wearing long pants and a long-sleeved shirt. Button your collar and tuck your pant legs into your boots or socks. Inspect yourself daily, especially the hairy parts of your body; immediately remove any ticks you find. To remove a tick that has attached itself, grasp it with tweezers close to the skin and gently pull until it comes loose. Do not squeeze, twist, or jerk the tick. Wash the wound with soap and water and apply an antiseptic. Thoroughly wash your hands after handling a tick.

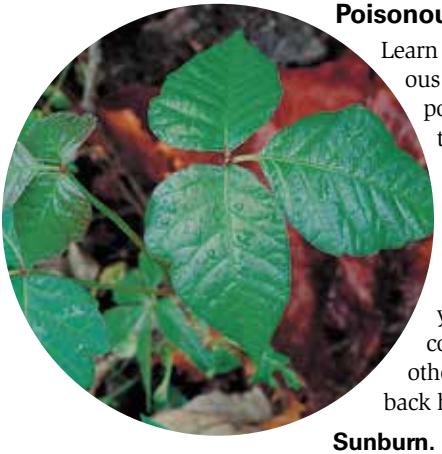
Snakebite. The two types of venomous snakes in the United States are the pit vipers (rattlesnakes, copperheads, and cottonmouths) and coral snakes. The bite of a nonvenomous snake causes only minor puncture wounds and can be treated as such. *For any snakebite injury,* get the victim under medical care immediately. Remove jewelry in case of swelling. If the victim must wait for medical attention to arrive, wash the wound. Restrict the victim's movement as much as possible, and keep the bite site at the approximate level of the heart. Do not apply ice or attempt to cut the skin or suck out the venom. Do not apply a constricting band or elastic bandage. Treat for shock and do not elevate the affected limb.

If you are not certain whether a snake is venomous, assume that it is.

Do not make any cuts on or apply suction to the bite, or use a tourniquet on the affected limb. Do not apply ice to the snakebite. Ice will not help the injury but could damage the skin and tissue.

Rattlesnake

Copperhead



Poisonous Plants

Learn how to recognize—and avoid—the poisonous plants in your area, such as poison ivy, poison oak, and poison sumac. If you think you have touched a poisonous plant, immediately wash the affected skin with soap and water. Wipe with rubbing alcohol and apply a soothing skin treatment such as calamine lotion. The oily sap from the leaves and stems can get on your clothing, so change clothes, keep the contaminated clothing separate from your other clothes, and wash it separately back home.

Sunburn. Prevent sunburn by limiting exposure to the sun, covering up, and wearing a broad-brimmed hat. Use a sunscreen with a sun protection factor (SPF) of at least 15. Apply it liberally and often. Treat a painful sunburn by applying cool, wet cloths. Stay in the shade if possible, and cover up (long pants, long-sleeved shirt, a brimmed hat) to avoid further overexposure to the sun.

Heat Exhaustion. Heat and dehydration can lead to heat exhaustion. Symptoms can include pale, clammy skin; nausea and headache; dizziness and fainting; muscle cramps; and weakness or lack of energy. A victim of heat exhaustion should cool down as quickly as possible. Get in the shade and drink small amounts of fluids, such as cool water or a sports drink. Apply cool, wet cloths to the skin, dampen the clothing, and fan the person to hasten cooling.

Heatstroke. Left untreated, heat exhaustion can develop into life-threatening heatstroke. Signals of heatstroke can include any of those for heat exhaustion as well as hot, sweaty, red skin; confusion and disorientation; and a rapid pulse.

Prevent dehydration by drinking plenty of fluids. Do not wait until you feel thirsty—thirst may signal that you are already becoming dehydrated. Drink enough to keep your urine clear. Be aware if you or your companions begin to feel fatigued or confused, or develop a headache, body aches, or dizziness.

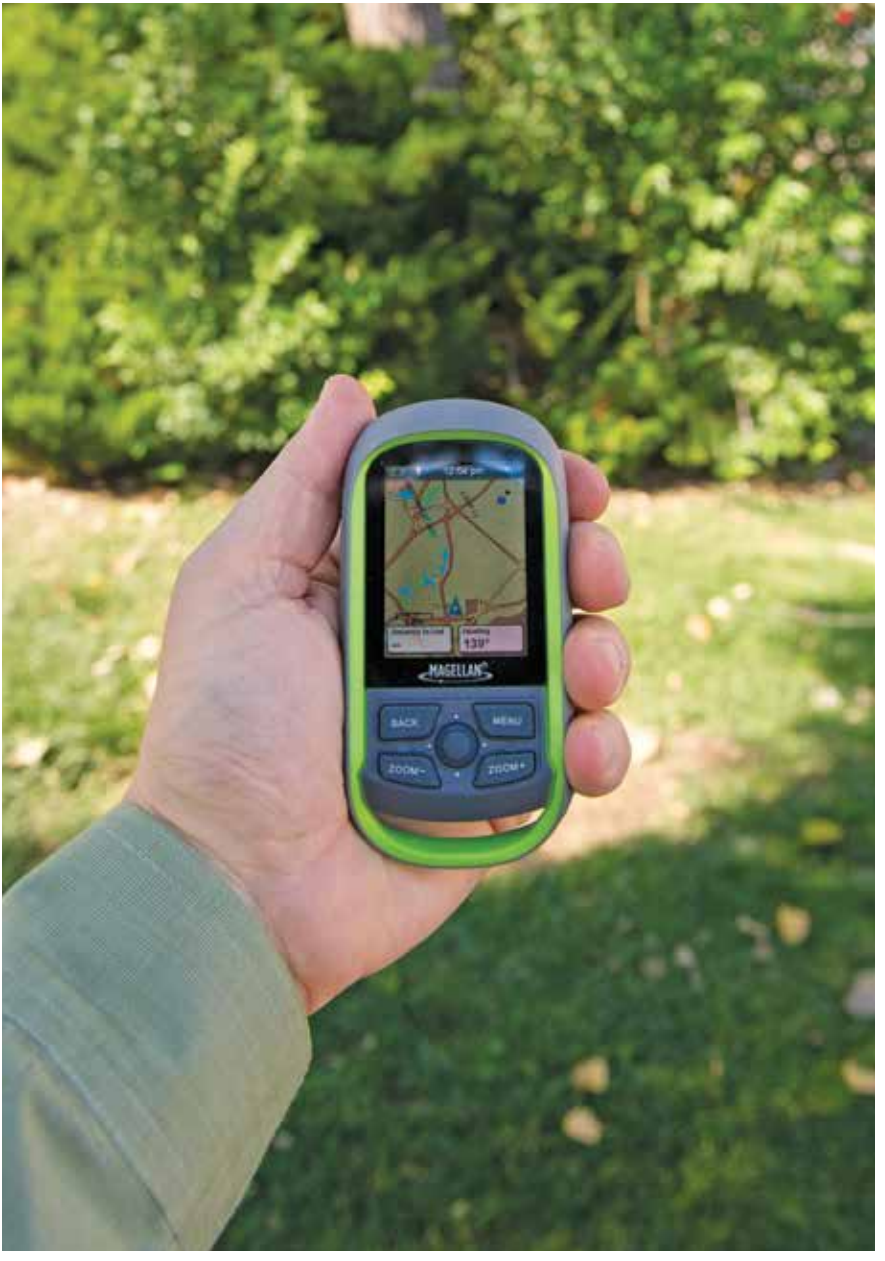
For victims of heatstroke, summon medical help immediately. While awaiting help, work to lower the victim's temperature. Move the person to a shady or air-conditioned area. Loosen tight clothing and cool the victim by fanning and applying wet cloths or towels. If you have ice packs, wrap them in a thin barrier (such as a thin towel) and place them under the armpits and against the neck and groin. If the person is able to drink, give small amounts of cool water.

Hypothermia. Temperatures do not have to be frigid for someone to develop hypothermia. Anyone caught in a cool, windy rain shower without proper rain gear can be at risk. A victim of hypothermia might feel cold, numb, fatigued, irritable, and increasingly clumsy. Uncontrollable shivering, slurred speech, poor judgment, and unconsciousness might also occur. Get the person out of the cold and into dry, warm clothes. Wrap the person in blankets or whatever is handy. Position water bottles filled with warm fluid in the armpit and groin areas. If the person is fully conscious and able to swallow, offer a warm drink (no caffeine or alcohol). To help prevent hypothermia, carry spare clothing in case you get wet or temperatures drop. Be alert for early symptoms in yourself and others. Act to keep full-blown hypothermia from developing. Take shelter, put on layers of warm clothing, eat something, and have a warm drink.

Dehydration is a common contributing factor to hypothermia. Wind, rain, hunger, and exhaustion can compound the danger.

Do not rewarm a victim of hypothermia too quickly (by immersing in warm water, for instance). Doing so can cause irregular and dangerous heartbeat. Instead, help warm the body gradually to its normal temperature.

Wearing the right clothing for the weather will keep you comfortable.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Geocaching Terms

Here are some common words and acronyms in the world of geocaching.

accuracy. No civilian GPS receiver has perfect accuracy (freedom from error). The accuracy of a GPSr may be low due to interference from trees, power lines, buildings, cliffs, or other features of the landscape that affect the strength of the satellite signals reaching the receiver.

archive. If you want to remove your cache from the public listing (or if a reviewer does this for you for lack of maintenance), it is "archived." You can also temporarily disable a cache if you need to inactivate it for a short time.

attributes. These icons on a cache detail are intended to provide helpful information to geocachers who wish to find specific types of caches. The icons represent unique cache characteristics, whether the cache is kid friendly, if it is available 24 hours a day, if you need special equipment, etc.

cache. Short for "geocache."

Cache to Eagle®. A series of public geocaches that have been set up at the sites of Eagle Scout service projects.

camo (camouflage). You can disguise your cache container in many clever ways.

CITO (Cache In Trash Out). In this geocaching event, people do cleanup or service for parks or the community.

clue (hint). Clues or hints give the person seeking the cache a little more information to help find it. The cache name, part of the description, or an official hint can all be clues.

difficulty. A ranking system to describe how hard the cache is to find. A cache that can be found quickly is ranked 1 (easiest to find); a cache that is exceptionally well hidden is ranked 5 (hardest to find).

DNF (Did Not Find). Geocachers use this acronym to state that they did not find a cache. If you get many DNF responses for a cache you set up, it's time to check on it!

FTF (First to Find). This acronym is used when logging cache finds to denote being the first to find a new geocache.

GC (geocache) code. Each code assigned to public geocache listings is unique.

geocache. A container, or cache, hidden at specific coordinates that includes, at minimum, a logbook for geocachers to sign when they find the cache. Caches often also contain "treasure," or items to trade.

geocaching. A worldwide game of hiding and seeking "treasure."

geocoin. Trackable coins with unique ID numbers engraved on them. They can be collected or travel the world from cache to cache.

geohunt. A game involving geocaching to hunt for clues or caches.

GPS. Global Positioning System is a system of satellites that work with a GPS receiver to determine location anywhere on Earth.

GPS receiver (GPSr). This electronic device calculates its position by carefully timing the signals received from at least four of the GPS satellites that circle Earth.

ground zero (GZ). The point where your GPS device shows that you have reached the exact cache location is known as ground zero. In practice, you almost never reach true "ground zero." (See "accuracy.")

hide. A shorthand term for a cache that is hidden.

log. The logbook, notebook, or log sheet inside a cache contains information from the cache owner and provides a place for geocachers to write their name and the date they visited the cache. Space may also be available for visitors to write notes or leave comments for the cache owner. A virtual logbook for the cache may be available online.

log-in name ("handle"). When you sign up for a geocaching.com account to use the public website, you need to create an ID to use as your geocaching name or "handle." Pick a name you like, and if it's not already taken, that will be who you are to the rest of the geocaching community.

map datum. A model used to match the location of features on the ground to coordinates and locations on a map. In general, a GPSr will be set to WGS 84 for geocaching.

marking a waypoint. This is how you put a location into your personal GPS unit. If you are standing still, you will be at a specific latitude and longitude. Go to the screen that says MARK or MARK WAYPOINT to add those coordinates into the list in your GPS device's memory. That way, you can come back to the same exact spot later.

reviewer. Volunteers from all over the world check new listings for various issues (making sure the cache follows the guidelines, for example) and then publish the cache listings on geocaching.com.

spoiler. Information that gives away the location of the find.

swag. "Stuff We All Get" refers to the toys and other trade items in a cache.

terrain. This describes the land features and how hard the cache is to get to. Terrain that can be traversed in a wheelchair has a rating of 1. A 1 rating means "flat and easy and not too far." A 5 rating probably means you shouldn't try it, as it will likely require special equipment, like scuba gear or mountaineers' ropes.

TFTC. Often written in logs, TFTC stands for "Thanks for the Cache." Other common acronyms include TFTH ("Thanks for the Hide"), TNLN ("Took Nothing Left Nothing"), and TNSL ("Took Nothing Signed Log"). However, some geocache owners prefer a personal note, and some even consider these acronyms to be rude.

trackable. Anything with a tracking number or other unique identifier that can be followed as the item travels from cache to cache.

Travel Bug®. An item that travels from cache location to cache location with a trackable number written on a metal tag so you can record on the geocaching.com website where you picked it up and where you dropped it off. Travel Bugs often have a "mission"—getting to a certain state, for example.

WAAS. Wide Area Augmentation System is a combination of satellites and ground stations that increases GPSr accuracy.

watch list. A list of users who are watching a specific Travel Bug or cache.

waypoint. A reference point for a physical location on Earth. It may be a landmark, a destination, or a point along a route on the way to reaching the destination (hence its name). Waypoints are defined by a set of coordinates that typically include latitude and longitude (or UTM coordinates), and sometimes altitude.

Geocaching Resources

Scouting Literature

Scouts BSA Handbook for Boys; Scouts BSA Handbook for Girls; Fieldbook; National Youth Leadership Training Syllabus; Cub Scout Fun With GPS; Backpacking, Camping, Cycling, First Aid, Hiking, Nature, Orienteering, and *Search and Rescue* merit badge pamphlets

With your parent or guardian's permission, visit Scouting America's official retail site, **scoutshop.org**, for a complete list of merit badge pamphlets and other helpful Scouting materials and supplies.

Books

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Geocaching.com. *The Complete Idiot's Guide to Geocaching.* ALPHA, 2012.

Gillin, Paul, and Dana Gillin. *The Joy of Geocaching.* Quill Driver Books, 2010.

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Long, Cully. *How to Puzzle Cache.* lulu.com, 2015.

McNamara, Joel, and K. Feltman. *Geocaching for Dummies.* John Wiley & Sons, 2004.

Sherman, Erik. *Geocaching: Hike and Seek With Your GPS.* Apress, 2004.

Stevens, Mary E. *Geocaching for the Boy Scout Program.* CreateSpace, 2010. Available from geoscouting.com.

———. *Geocaching for the Cub Scout Program.* CreateSpace, 2010. Available from geoscouting.com.

Organizations and Websites

(For other geocaching-related websites, see "Geocaching and the Internet" earlier in this pamphlet.)

Cache In Trash Out
geocaching.com/cito

Geocachers' Creed
geocreed.info

Geocaching.com
geocaching.com

Leave No Trace Center for Outdoor Ethics
lnt.org

Maptools.com
maptools.com

U.S. Geological Survey
usgs.gov

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MERIT BADGE LIBRARY

Though intended as an aid to youth in Scouts BSA and qualified Venturers and Sea Scouts in meeting merit badge requirements, Scouting America's merit badge pamphlets are of general interest and are made available by many schools and public libraries.

Always check scouting.org for the latest merit badge requirements. If a Scout has already started working on a merit badge when new requirements for that merit badge are introduced, *they may continue to use the same pamphlet to earn the badge and fulfill the requirements therein.* In other words, the Scout need not start over again with the revised requirements.

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Citizenship in the World
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Swimming
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