

Navigation Northwest

A Quarterly Newsletter of the Seattle Navigation Committee

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Heybrook Brush Out Stewardship October 17

By Greg Testa

Volunteers are needed Saturday, October 17, to clear sight paths in the stump fields for Wilderness Navigation students to use in the upcoming Heybrook Ridge field trips. The forest manager has also asked us to clear road margins of annual growth. We anticipate clearing a new area--a potential novel series of launch sites for the final problem.

We'll start at 9am at the Heybrook Trail Head on the north side of US Hwy 2 about two miles east of the cut-off to the Town of Index. Prepare for a wilderness day hike on and off trail with 10 essentials in variable, fall weather. About 900 ft. of elevation gain and 8 miles. Bring work gloves and dress for brushy activity with full mountaineering boots and gaiters. Seattle Navigation supplies the work tools but feel free to bring your own favorite brush tool.

Stewardship credit. Cookies are provided. Register at Stewardship—Heybrook Lookout & Ridge.

--Greg Testa is Seattle Navigation Co Chair and stewardship champion.

Wilderness Navigation Instructor Training October 8

By Paul Thomsen

Mountaineers considering volunteering to instruct at the upcoming Wilderness Navigation Workshop (Oct 29) and/or Field Trip (Nov 7) are strongly encouraged to enroll in the free Instructor Training Thursday, October 8 from 6:30 to 8:30 pm.

This hands-on workshop prepares you with teaching techniques, tools, and tricks of the trade for the new Wilderness Navigation course. New instructors are encouraged to attend, but it's not required. Experienced instructors are also welcome as there are some key differences from the Basic Navigation course.

We'll review the Workshop problem set from an instructor's point of view, and we'll also discuss key points you should cover with your small group during the Field Trip. We'll also talk about UTM in more detail. Please bring USGS Baring and Index maps, compass, Smart Phone (if you have one), altimeter and GPS (if you have them), pencil, and paper for taking notes.

In order to attend you need to be a Basic Navigation Course graduate, but if you're not then you'll need to contact the Seattle Navigation Committee Chair to apply for special permission.

--Paul Thomsen leads the instructor training division and is a veteran Seattle Navigation Committee member.

Basic Navigation Transition to Wilderness Navigation

By Peter Hendrickson

Seattle Branch piloted a Wilderness Navigation Course workshop September 23 with 21 students and 12 instructors & observers, a first big step in revamping the Basic Navigation Course. Changes were driven by the June weekend Navigation Summit 2015 at Meany Lodge. Four branches and all relevant committees were engaged in making recommendations for change.

Seattle 2014 Volunteer of the Year Bruce Crawford is the major architect for the course remake, the first major change in over three decades. He worked with Past Committee Chairs Lynn Graf and Peter Hendrickson. Instructors for the September pilot came from navigation, climbing, scrambling, hiking/backpacking, and back country snow across Seattle and Foothills branches. Several had attended the Summit.

Both the substance and the delivery of the **Wilderness Navigation Workshop** are changing. Following are highlights:

- The course is targeted for climbers, scramblers, back country hikers and wilderness skiers/snowshoers. Those wishing front country, on trail instruction are guided to Introduction to Map & Compass or Staying Found.

- Pre-trip navigation planning is emphasized with homework before both the workshop and field trip that goes beyond carrying the 10 Essentials.
- Altimeters are used as a third leg of the Map-Compass-Altimeter tools triangle. Basic point position use of GPSers is expected but more thorough instruction is saved for the GPS course.
- Students are encouraged to bring their Smart Phones with free or nearly free altimeter and GPS/UTM apps. At minimum, instructors will demonstrate appropriate use and risks of these tools.
- The first instructional hour will be PowerPoint led by the Day Lead with interactive work instructor-supported at the tables.
- The new problem set integrates altitude and GPS/UTM information from the expanded tool set. Index and Baring USGS quads are still used.
- Line and point position are emphasized with triangulation taking a minor role.

Further changes are under development for the **Heybrook Ridge Field Trip**. In addition to follow through on the workshop revisions above, there is much greater emphasis on point and line position. Altimeter and GPS use are integrated with a goal of using the most appropriate set of navigation tools over the course of an outing.

Developers are giving serious consideration to abbreviating the Final Problem to create more time for activities beyond following bearings. Feedback from many quarters points to reducing the long waits for the exit briefing and making better use of instructor time than long service on the sweep line.

The team is exploring more efficient alternatives to the stump fields for bearings practice. In addition, conversations continue about the addition of a summer session to meet the needs of scramblers and climbers completing their basic courses.

An in-city practice course at Seattle's Volunteer Park is ready for further beta testing to work out the kinks. Volunteers? Contact the Editor.

Program Center staff has been assured that Seattle will continue to honor Basic Navigation Badges earned at other branches to satisfy navigation requirements. While conversations continue with navigation colleagues, Wilderness Navigation may not be in the cards across all branches in the near term. There are hopes that a mid-year Navigation Summit might occur in conjunction with the December 5 Leadership Conference.

Smart Phone and Dedicated GPS Navigation Course--Seattle

Are you interested in learning to use your smart phone as a wilderness GPS? Maybe you have had a dedicated GPS for years and want to get the most out of it? The Smart Phone and Dedicated GPS Navigation course is for you! We will cover basic usage of both dedicated GPS units and some select GPS apps for smart phones, as well as common issues that can affect GPS accuracy and ways to avoid them. This course is an evening at the Mountaineers Seattle Program Center in Magnuson Park, split between a classroom lecture and a hands on outdoor exercise. This course is open to Wilderness (Basic) Navigation students and graduates.

Topics include:

- Overview of how GPS works
- Common accuracy issues and solutions
- Review of UTM coordinates
- Entering waypoints
- Navigating to a way point
- Back tracking a route
- Overview of emergency locating beacons (SPOT, PLB)

Students need to bring a GPS enabled device to the class; loaners are not available. We cover both Gaia for iOS and Android devices (\$20, pro not required) and Garmin dedicated units. Other brand GPS units are welcome, but instructors may not be familiar with them.

Lead course administrator is Brain Seater for the six annual classes.

The current URL provides a description and the 2016 dates are on the calendar: <https://www.mountaineers.org/about/branches-committees/seattle-branch/committees/seattle-navigation-committee/course-templates/smart-phone-dedicated-gps-seattle/smart-phone-dedicated-gps-seattle-2014-1>

| Smart Phone & Dedicated GPS Course | Location |
|------------------------------------|------------------------|
| Monday, October 05, 2015 | Seattle Program Center |
| Thursday, January 21, 2016 | Seattle Program Center |
| Monday, April 18 | Seattle Program Center |
| Thursday, May 12 | Seattle Program Center |
| Monday, June 20 | Seattle Program Center |
| Tuesday, August 9 | Seattle Program Center |
| Thursday, October 6 | Seattle Program Center |

Wilderness (Basic) Navigation Course Offerings 2016--Seattle

Basic Navigation transitions to Wilderness Navigation in 2016, clearly focused on wilderness/back country travel including off trail navigation to meet requirements

for Alpine Scramble, Basic Climbing, Snowshoe and BC Ski students (and others). Altimeters and GPS units (basic point position) are included. We hope to partner with Foothills Branch to help staff Staying Found, an on-trail/front country, less physically rigorous course on West Tiger Mountain off I-90 near Issaquah. Staying Found does not meet other back country course requirements.

<https://www.mountaineers.org/about/branches-committees/seattle-branch/committees/seattle-navigation-committee/course-templates/basic-navigation-course/basic-navigation-course-seattle-2014>

| Date & Day | Workshop | Date & Day | Fieldtrip |
|-----------------------|-----------------|-----------------------|------------------|
| Thurs, Oct 29, 2015 | Program Center | Sat, November 7 | Heybrook Ridge |
| Thur, Jan 28, 2016 | Program Center | | |
| Tues, February 9 | Program Center | Sat, February 13 | Heybrook Ridge |
| Thur, February 29 | Program Center | Sat, March 12 | Heybrook Ridge |
| Thur, March 3 | Program Center | Sun, March 13 | Heybrook Ridge |
| Tues, March 29 | Program Center | Sat, April 2 | Heybrook Ridge |
| Thur, Nov 3 | Program Center | Sat, Nov 5 | Heybrook Ridge |

Introduction to Map & Compass—Getting Started--Seattle

The Seattle Navigation Committee has scheduled six 2016 Introduction to Map and Compass dates at the Seattle Program Center from 6:30 to 8:30 p.m. Instructors are drawn from the pool of Basic Navigation Course teachers. You can enroll at:

<https://www.mountaineers.org/about/branches-committees/seattle-branch/committees/seattle-navigation-committee/course-templates/introduction-to-map-compass/introduction-to-map-compass-seattle-2014-1>. Administrative

lead is Brian Carpenter. This Getting Started introductory class does not satisfy the navigation requirement for Alpine Scramble, Basic Climbing, Snowshoe or Backcountry Ski.

| Introduction to Map & Compass 2016 | Location |
|---|------------------------|
| Tuesday, January 12, 2016 | Seattle Program Center |
| Thursday, April 14 | Seattle Program Center |
| Tuesday, May 10 | Seattle Program Center |
| Thursday, June 16 | Seattle Program Center |
| Monday, August 15 | Seattle Program Center |
| Thursday, September 22 | Seattle Program Center |
| | |

Other Branches 2016 Navigation Courses

| Branch | Course | Dates |
|---------------|--------------------------------------|--------------|
| Tacoma | Wilderness Navigation Lectures 1 & 2 | April 7 & 14 |
| Tacoma | Wilderness Navigation Field Trip | April 16 |
| Tacoma | Wilderness Navigation Lectures 1 & 2 | May 3 & 10 |

| | | |
|---------|--|----------------|
| Tacoma | Wilderness Navigation Field Trip | May 14 |
| Tacoma | Wilderness Navigation Lectures 1 & 2 | August 10 & 17 |
| Tacoma | Wilderness Navigation Field Trip | August 20 |
| Olympia | Basic Navigation Course Lectures 1 & 2 | April 12 & 14 |
| Olympia | Basic Course Field Trips | April 16 & 17 |
| | | |

Navigation Projects

>>Our Seattle Volunteer Park effort to create a navigation map, compass, and SmartPhone (altimeter & UTM coordinates) practice course is now in beta testing. Drop me a line if you'd like to give the short practice route a try.

--Editor

>>The navigation elearning pilot proposal was due to be presented to the Board of Directors October 1 for 2016 funding. Seattle Navigation is striving to complete revised documents no later than January 1 so that design and execution could start in February. Project Manager is Doug Canfield, Mountaineers Books.

Links, Apps of Interest

Our often-consulted Seattle Navigation website has lived "outside" the official The Mountaineers website for many years. Sub-Committee Chair Wes Rogers is working with staff and other committees to bring our pages into the fold. Your comments and suggestions are ever welcome.

And the links...

- Background on the creation of OpenStreetMap:
<http://www.directionsmag.com/entry/steve-coast-on-openstreetmap-hot-and-paying-it-forward/446539>
- Washington Trails Association on navigation risks:
<http://www.wta.org/signpost/tips-for-evaluating-risk-on-trail>
- A kayaker's vision of topo maps from Paddling.net:
http://www.paddling.net/sameboat/archives/sameboat822.html?utm_source=email_newsletter&utm_medium=email
- A CalTopo blog with up-to-date features: <http://caltopo.blogspot.com/>
- Quick route to your compass declination, anywhere (tap calculate link):
<http://ngdc.noaa.gov/geomag/declination.shtml>

Navigation Gear--Compasses

Required Compass Features: Seattle Wilderness (Basic) Navigation Course

Seattle Mountaineers—Revised September 2015

1. **Adjustable declination:** A moveable orienting arrow to allow built-in declination adjustment. If there is one feature that simplifies map and compass work, this is it. Compasses with adjustable declination can often be identified by the presence of an adjustment screw, usually brass or copper-colored, and a small key attached to the lanyard.

- All students **MUST** have a compass with adjustable declination. The presence of a declination scale does not guarantee that it can be adjusted. We also recommend avoiding the 'tool-less' declination feature (we have no experience with newest models.)

- If you already have a compass without adjustable declination, you may not use it in this course. Experience indicates that such compasses detract from the learning experience.

2. A **transparent rectangular base plate** with a direction of travel arrow or a sighting mirror.

- Transparency allows map features to be seen underneath the compass.

- A rectangular shape provides straight edges and square angles to plot and triangulate on the map.

3. A **bezel** (the rotating housing) marked clockwise from 0 to 360 degrees in increments of two degrees or less. In general, bezels should be large to allow use while wearing gloves - the larger size also improves accuracy.

4. **Meridian lines:** Parallel 'meridian lines' on the bottom of the interior of the circular compass housing rotate with the bezel when it is turned. The meridian lines run parallel to the north-south axis of the bezel, however turned, for plotting and triangulating on the map. Longer lines are better.

5. A **ruler and/or gradient scale** engraved on one of the straight edges, used for measuring distances. Compasses with other additional scales facilitate advanced navigation. In the U.S. 1:24000 scales (rather than 1:25000) are preferred.

6. A **3 to 4-inch base plate**. A longer straight edge makes map work easier.

Additional recommendations

- A sighting mirror in the cover: Reduces error introduced when moving compass from eye-level after sighting to waist-level for reading the dial.
- A liquid-filled housing: Reduces erratic needle movement (only needed on some compasses). In some cases, steadying the compass needle can be difficult
- An inclinometer: A gravity driven arrow that allows you to measure slope angle.

Current favorites with a sighting mirror include the Silva's Ranger CLs & Ranger 75 and K & R Sherpa & Alpin.

Recommended compasses without a mirror include the Suunto M-3 series and the Silva Explorer Pro.

Caveats Across Manufacturers

Please note that not all of these recommended compasses are available at REI. Silva can be purchased online at Campsaver.com and at Cabela's. Suunto is currently available at REI and online. Keep any receipt! We have unfortunately had many defective compasses in the past.

Brunton compasses have also been recommended. However, current offerings all now include 'tool-less declination' which requires pressing down on the bezel to set the declination. We have found this to be difficult and may not provide the best accuracy. While Brunton compasses meet all our specifications, tool-less declination makes them problematic and we do not recommend using this brand for the class. And beware the UST ~\$7 knock-off baseplate compass available via Amazon and other outlets. Our gear tests show it to be unreliable.

The Suunto M-3 and MC-2 lines continue to exhibit a 2-degree magnetic error in many instances. Most can be corrected by adding another 2-3 degrees East (i.e., 16 degrees East would need to be 18-19 degrees East). Meridian line length has also been sacrificed for Suunto branding on both models. If you are comfortable with making the additional declination correction and foreshortened meridian lines, the M-3 and MC-2 lines are OK.

(Rev 28Sept2015/ph)

Why do I need to calibrate my compass?

By Bob Boyd

This is the fourth year since we realized *not all compasses point in the same direction*, and the third year of teaching compass calibration to several different groups. Identifying and recognizing the problem actually exists, is the first step towards happy navigation.

By initially taking these few steps, we have found almost everyone will pass navigation with good scores. By ignoring this easy fix, we can set up our Mountaineers and SAR students for frustration and failure.

So how do we calibrate a compass ?

First, it requires a compass, and a navigator, because they are part of the problem.

Second, you need a reliable bearing between two fixed points. Bearings from another pair provide even greater accuracy. A staff compass or surveyor's transit usually works well for this task.

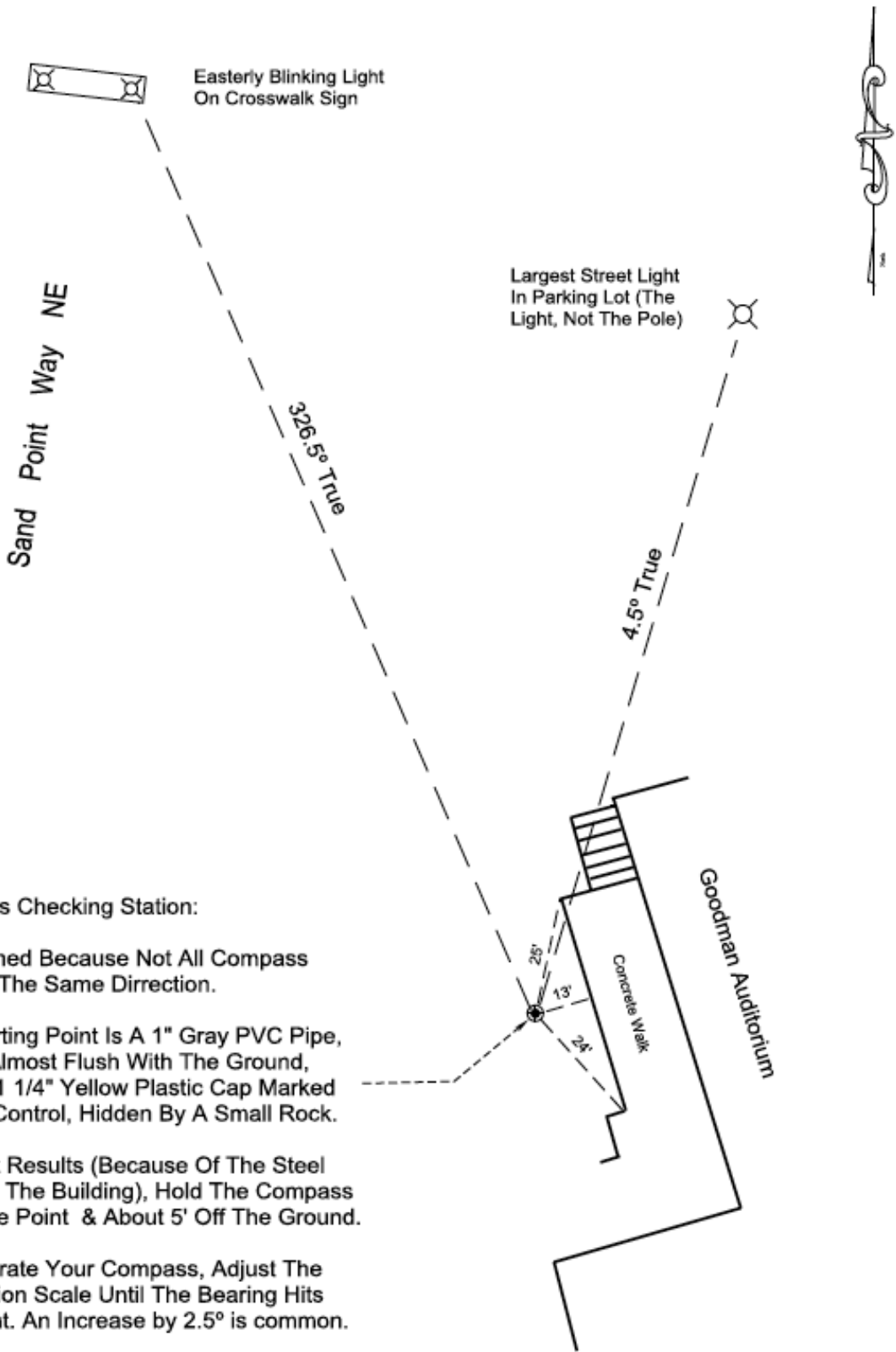
Third, after the bearing(s) has been established, step up and try your luck with your compass. By preloading the bearing(s) into your compass, your compass will likely point right or left of the mark.

Fourth, now adjust your declination to compensate for your pointing error. If you and your compass point right of the mark, increase your declination. Likewise if you and your compass point left, decrease your declination.

Fifth, once you are on the mark, you have completed calibration. Note, as you get better and better, your pointing error will change, so recalibrate.

So what should I preset my compass to? Presently in the Seattle area, 16°E is the declination. After calibration you and your compass may work better in 14°E to 19°E. Remember that correction of 3°Rt or 2°Lt and make adjustments as you travel.

Bob Boyd, Washington State Licensed Surveyor, is a Nav instructor for ESAR, KCSARA, WESAR, and The Mountaineers. He serves on the Seattle Navigation Committee.



Compass Checking Station:

Established Because Not All Compass Point In The Same Dirrection.

The Starting Point Is A 1" Gray PVC Pipe, Driven Almost Flush With The Ground, With A 1 1/4" Yellow Plastic Cap Marked Survey Control, Hidden By A Small Rock.

For Best Results (Because Of The Steel Roof On The Building), Hold The Compass Over The Point & About 5' Off The Ground.

To Calibrate Your Compass, Adjust The Declination Scale Until The Bearing Hits The Light. An Increase by 2.5° is common.

Please Hide With Rock When Finished.

RWB
2/2014

Seattle Program Center Compass Calibration Station

cheat sheet

Navigate Like a Pro

Liz Thomas has backpacked more than 15,000 miles, and she holds the women's unsupported speed record on the Appalachian Trail (80 days). Here's how she stays on track.

KEEP YOUR MIND AND BODY SHARP.

1 It's really hard to navigate if you're hungry, thirsty, or cold. "An unfueled brain is more likely to make poor decisions," Thomas says.



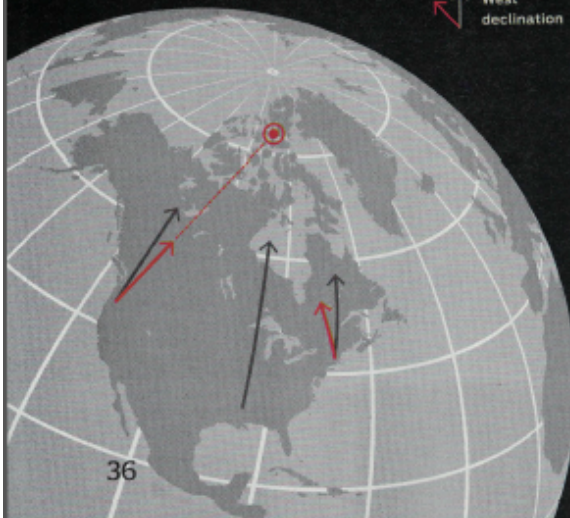
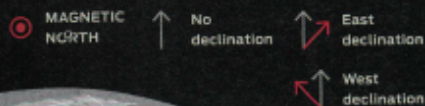
2

CONFIRM YOUR LOCATION ON YOUR MAP OFTEN.

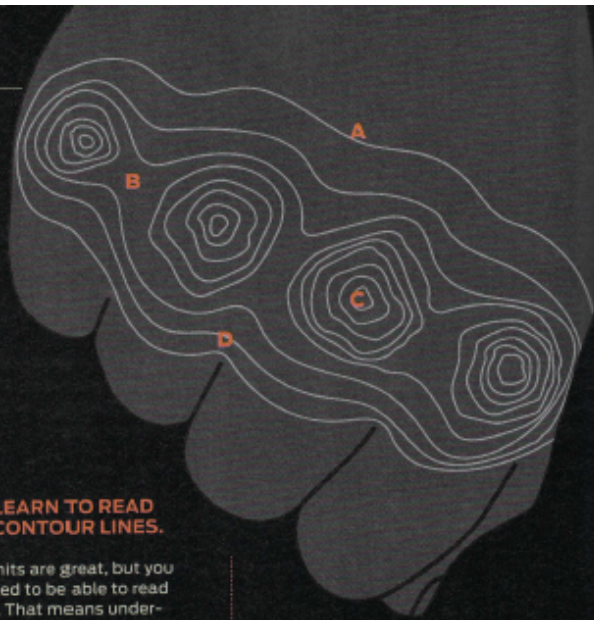
Sounds obvious, but this is the single best way to prevent wandering off course. "I hike with a map in my hand, pocket, or—a little embarrassingly—stuffed in my bra," Thomas says.

4 LEARN THE DIFFERENCE BETWEEN TRUE NORTH AND MAGNETIC NORTH.

A compass needle points to magnetic north. That's not the same as true north (the North Pole, or the direction of the North Star). The difference between true north and magnetic north is called declination; it changes over time (as the Earth's magnetic field shifts), and it varies according to your location (see below). Learn how to account for it at backpacker.com/declination.



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3 LEARN TO READ CONTOUR LINES.

GPS units are great, but you still need to be able to read a map. That means understanding how contour lines represent real-world terrain. Get started: Make a fist into "Knuckle Mountains." Draw a circle around each peak, or knuckle, keeping your pen at the same "elevation" as you draw each line. Draw concentric circles on each knuckle, connecting points that are the same height. Flatten your hand: The lines represent different "elevations" on the topographic map of your fist.

A. Contour line. The closer the lines, the steeper the terrain. Check your map for the contour interval (the elevation change between lines). **B.** Saddle, indicated by opposing U's. **C.** Peak. **D.** Drainage or valley, with the U's (or V's) pointing the same direction, uphill. Ridges look similar, with the V's pointing the same direction, but they face downhill.

THINK LIKE A RAILROAD BUILDER.

5 Traveling cross-country? Observe the landscape and imagine, "If I were a railroad engineer, where would I build the line?" You will likely choose the path of least resistance.

6 USE NATURE'S BUMPER LANES.

Ridges, rivers, and prominent peaks can all serve as route boundaries. Pay attention to the terrain that borders your route, and use landmarks to avoid going astray.

7 AVOID SHORTCUTS.

Not only does cutting switchbacks or taking shortcuts cause erosion, but it's also an easy way to get lost.

ENTER THE RIGHT DATUM IN YOUR GPS.

8 Technology is great—if you use it correctly. The most common GPS error: failing to match datums (the systems used to match features on the ground to coordinates on the map). For example, a WGS 84 coordinate taken from Google Earth and entered into a GPS set to NAD 27 can be up to a quarter mile off.

TEXT BY VALERIE BUCCO

Never Get Lost: Get tips on using a map and compass in our book, *Trailside Navigation* (\$13; falcon.com).

--Backpacker magazine is an excellent source of clear, well-vetted navigation tips.

Inquiries, Contributions, Letters to the Editor to Peter Hendrickson
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OK to Forward

Email Navigation Northwest to any friends/outdoors partners to distribute

Guidelines for contributors: Kindly contact editor.

**"Do not go where the path may lead, go instead where there is no path
and leave a trail." --Ralph Waldo Emerson, American writer, 1803-1882**

(Rev. 29Sept2015/ph