

# CASART



## Introduction to Human Tracking for Search and Rescue Volunteers

### Session Goals

#### Attendees will:

- ◆ Understand what constitutes a "Sign" and the importance of being "Track Aware"
- ◆ Become familiar with tracking terminology and techniques
- ◆ Experience human tracking first hand to learn to see physical "sign" that others would look at and not see
- ◆ Understand the patience and concentration necessary to identify a potential human track in the field to be a more effective line searcher and SAR volunteer

### Session Content

- ◆ One day, 6 hour course, 2.5 hours in the classroom, lunch and 3.5 hours in the field
- ◆ A Question and Answer session will follow lecture
- ◆ Field work - We'll break up into groups of three to begin tracking. Groups will begin at a marked line of sign with an obvious footprint and draw and measure the print. Next we'll set up our tracking sticks to measure the stride interval of the subject and then begin tracking.

## Part 1 — What Constitutes a "Sign" and the Importance of Being "Track Aware"

As Search and Rescue volunteers, our goal is to help recover a lost individual. But it's important to understand that we are not just looking for a person. We should be looking for any physical indication that the lost individual has left behind. We should be looking for "Sign."

So, what is a sign?

**Sign is all evidence, not limited to footfalls, of a person's passage or presence.**

Signs that are easy to see might include discarded clothing, a lost hat, a water bottle or candy wrappers.

The harder to see signs are the broken twigs, bruised vegetation and compressed leaves left behind when a foot strikes the ground.

Without taking a class like this you'd probably find that what an experienced tracker "sees" and calls a sign, would look to you like nothing at all. You might even think that the tracker is crazy. But he's not. The tracker has a different mindset and the tracker has a trained eye.

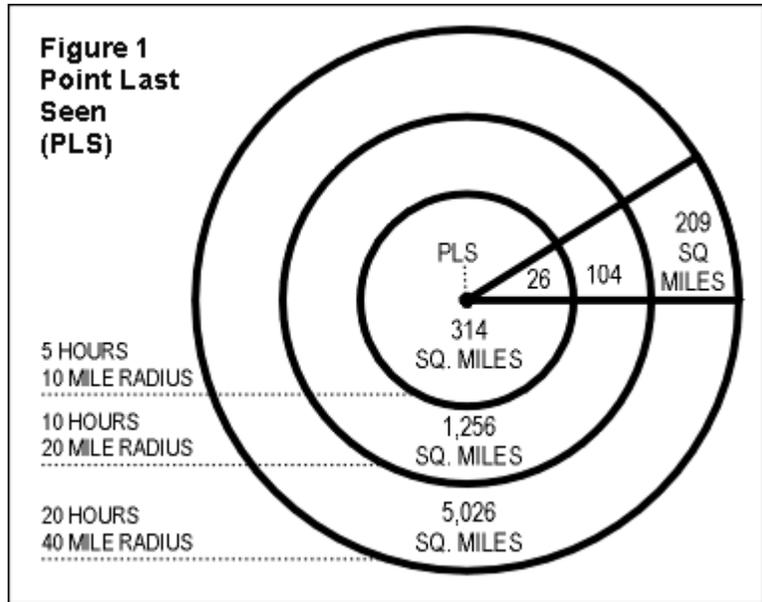
Can you see the signs in the picture to the right? It's there, but it's hard to see with an untrained eye.



The field portion of our class is designed to change how you think about what constitutes a sign, and to train your eye so that you'll see what might otherwise be invisible to you. That way you can understand the patience and concentration it takes to notice a sign in the first place. And hopefully, you'll be a better Search and Rescue Volunteer for the experience, because on a real search, finding a sign that you might otherwise overlook could mean the difference between life and death for the subject of the search. Simply put, the importance of you being "track aware" could someday save a life.

**Part II — Subject's Point Last Seen (PLS) and Track Identification**

By the time we are called to a search, the Rangers or initial responders will have established the place that the subject was last seen or known to be. The "Point Last Seen" is often abbreviated PLS. Identifying a place last seen and a direction traveled by the subject is very important in that it helps to concentrate the search area as shown in Figure 1.



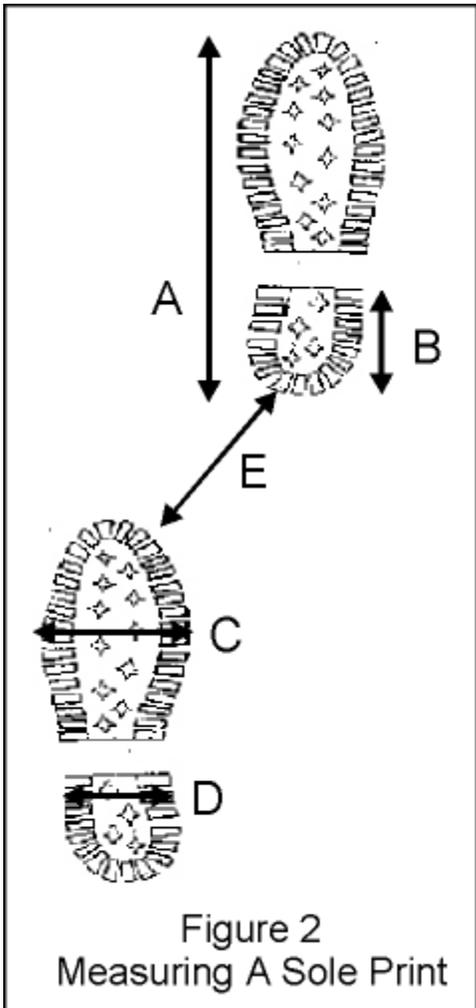
The initial responders will also have developed the most complete description of the lost subject(s) as possible. That description will include the subject's sex, age, size, weight, hair color and clothing worn. With luck, the description will include a description of the type of shoe the subject was wearing and maybe even a drawing of the sole or lug pattern. A description of the shoe type and size is helpful to understand what type of track to look for in the field.

In a more formal tracking training session the description of the footprint would include students making a detailed drawing of the print and measuring the print as follows:

- A) Overall length
  - B) Length of heel
  - C) Width of the ball of the foot
  - D) Width of the heel
- (See Figure 2)

The reasons to make a detailed drawing of the footprint include its possible use as evidence and in helping you to remember it yourself so you can communicate information about it to others.

Once a set of tracks is found in the field the tracker can measure the stride interval (E, Figure 2), which is the distance between the tip of the toe of the first print and the back of the heel in the following one. The stride interval can be marked on a "tracking stick" and then measured repeatedly to help find the most likely location of next footprint. This area is called the "Prime Sign Area."

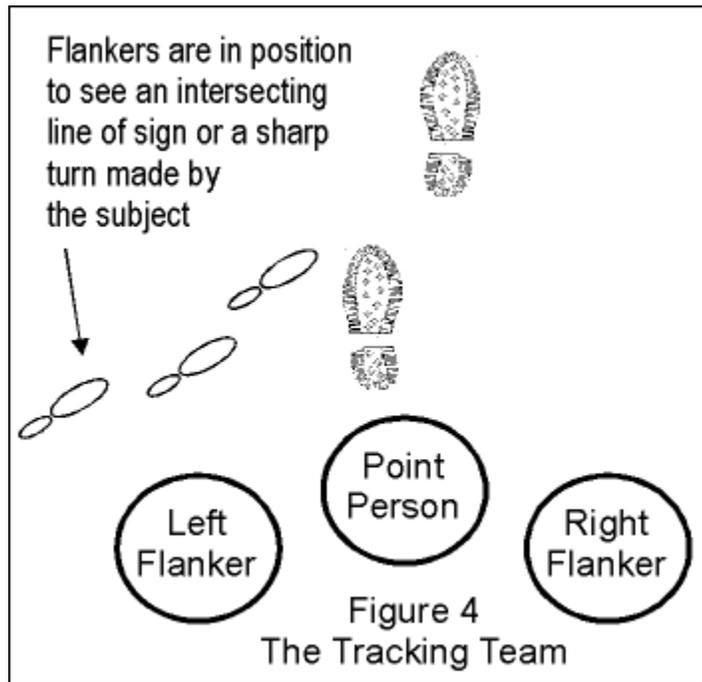
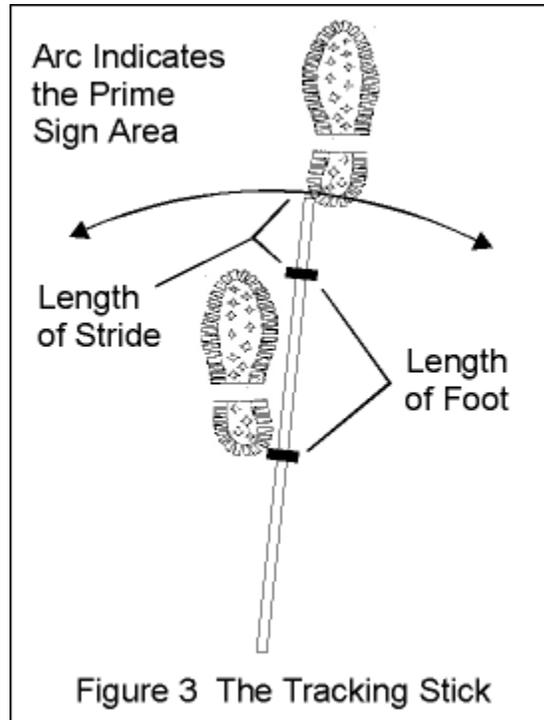


Use of the tracking stick is shown in Figure 3.  
(Right)

### Part III — Teamwork, What to Look For and Training Yourself to See a Line of Sign

The preferred tracking team is a three person team consisting of a point person in the center and two flankers walking or crawling slightly behind. (See Figure 4) The flankers remain slightly behind the point person in order not to contaminate any unfound tracks that lie ahead. If the subject changed directions having the flankers slightly behind decreases the chances of contamination.

The point person swings their tracking stick to the next likely location of a track and the team works to identify a footprint. Some prints will be obvious and others are not. Each time the team agrees that they have a print then one of the flankers tears a piece of flagging tape and marks the heel of the print by pressing the tape into the ground. The team then moves forward in search of the next print, taking care not to damage the last marked track. The team should periodically rotate the person on point to provide a change of pace and a change of position. It can get tiring holding the tracking stick and anyone on the team who needs a break should speak up as your eyes will need a break now and then too. Trackers will be working close together in uncomfortable positions, terrain and conditions. Good honest, communication, and a positive attitude can be critical to working well as a team.



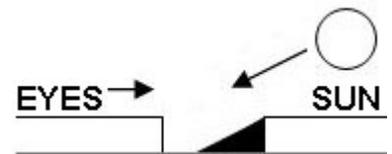
## What to Look For

Unless a footprint happens to fall on a slightly moist patch of perfectly flat, bare earth – which is just about non-existent in an Adirondack forest – you'll find that a footprint in the woods rarely looks anything like the idea of a footprint that you have in your mind right now. It took some work fluffing up the soil in this picture (Right) to make a full, easily seen footprint. Put that perfect footprint out of your mind. That's not how they look in the field.



A footprint in the woods might consist of the curved impression of a "heel strike" on some decaying leaves, an area of "compression" including some tiny plants that are crushed, broken or bruised, a pebble dislodged from where it sat for years, or a little bit of soil churned up from a toe scraping the ground as it moved forward towards the next step.

Observe the shadows in the footprint photograph above and then look at the direction of the sun diagram (right). Looking towards the light source will help you to see a small ridge that might otherwise be difficult to see looking more from the side of the light source.



This concept is most important when tracking at night with a hand-held flashlight. Oblique lighting is the process whereby a flashlight is held horizontally and parallel to the ground while shining the beam at the suspected track. The light angle is moved to accentuate the sign detail by creating artificial shadows.

## A glossary of tracking terms having to do with sign and indicators of a foot strike:

- Aged Vegetation - looking for a known amount of decay on damaged vegetation
- Broken Stems, branches and twigs
- Bruised Vegetation - if a plant has merely been bumped it may show a bruise even though it didn't break
- Compressed Areas - caused by the weight of a foot, will be mostly focused at the heel and ball of the foot
- Continuity of Sign - The evidence of footfalls is in unbroken sequence and spacing
- Disturbance - any disturbance that could indicate a footfall. Disturbed leaf litter, animal droppings or soil
- Dislodged Sticks or Stones - any object dislodged from where it had been for a long time will leave a sign
- Embedded Object - a stick or pebble embedded into the ground or underlying vegetation by compression
- Grass Trail - vegetation that is turned, flipped or twisted towards the direction of travel
- Kick or Toe Kick - a depression with debris scattered by a footfall and then movement of the foot pushing off towards the next step
- Light Angle - looking from one side a slight depression will show a shadow but not from the other. Another reason to work in groups of three
- Line of Sign - same as Continuity of Sign above
- Oblique Lighting - a process whereby a flashlight is held horizontally and parallel, low to the ground while shining the beam at the suspected track. The light angle is moved to accentuate the sign detail by creating artificial shadows. Used in low light or dark conditions.
- Prime Sign Area - the area where the next footfall should appear, found using a properly set up tracking stick
- Scuff mark - dragged debris or scraped surface from a dragging toe or a slip or turn while stepping
- Shine - vegetation that has been stepped on will often appear to shine when surfaces turn in a uniform direction
- Signature track - unmistakable footprint evidence
- Stride interval - the distance from the tip of one toe to the back of the heel in the next footprint
- Toe Dig - indented mark made by the toe in a normal walking motion
- Tracker Burnout or Blindness - what occurs after reading the entire list above and after tracking too long

## Good Teamwork Equals Better Tracking

While tracking you might find many of the indications listed in the Tracking Terms Glossary in one footprint. Or, you might find only the slightest hint of one of them. Teamwork will be critical for two reasons.

- 1) In difficult terrain only one team member may have the right angle to see a sign, so it is important that everyone contribute to the best of their ability
- 2) There are decisions to be made, for example: Is it a track or not? Do we go on, or do we go back to the last track we were sure of? Should we take a break?

By focusing everyone from three different angles on the "Prime Sign Area" determined with a tracking stick, the team will eventually find some indication of a footfall. Then you work it as a team to find as many items as you need as a team to convince yourselves that you have a track. If you don't find anything else after a focused team examination you must decide as a team to go back to the last track and start the process again. After gaining a little experience, some prints will almost magically appear. And I don't say "appear" lightly. There are times when you can look and look and see nothing, and then one little item is spotted and suddenly, the entire footprint appears to the whole team. I believe this phenomena is a direct result of training your eyes to see sign.

It is helpful now and then to stand up and look back at the marked "line of sign." That is the line created by flagging each heel print that indicates the path the subject has traveled. The line of sign tends to go in a relatively straight line because that's how people walk, unless a natural barrier is in the way, like a fallen branch or a large puddle. Then you have to figure out which route they took around the obstacle.

The goal of the tracking team is to move along, marking the line of sign as fast as possible while remaining sure that you are on the right track.

Don't always look down. Rest your eyes now and then and use common sense. When you arrive at tall ground cover you'll be able to track quickly.

*(Right - a footprint in the sand)*

Finding an obvious footprint in the sand or mud after tracking through difficult terrain will be a welcome sign that you are on the right track.

Of course, the ultimate goal is to recover the lost individual.

Your knowledge of tracking and an awareness of what constitutes sign can make you a more effective search and rescue volunteer in the field.



# Footprint Card

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**\*LOCATION** \_\_\_\_\_ **TIME:** \_\_\_\_\_

\_\_\_\_\_ **DATE:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**\*SUBJECT HEADING:**

\_\_\_\_\_

**\*BASIC TYPE:**

\_\_\_\_\_

**\*PATTERN:**

\_\_\_\_\_

**DIMENSIONS - OVERALL:**

**\*L** \_\_\_\_\_ **W** \_\_\_\_\_

**HEEL:**

**\*L** \_\_\_\_\_ **W** \_\_\_\_\_

**STRIDE (TOE TO HEEL):** \_\_\_\_\_

\_\_\_\_\_

**GROUND SURFACE:**

\_\_\_\_\_

\_\_\_\_\_

**REMARKS:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**\* REPORT TO BASE**

