

Clue Detection



Unit 9: Clue Detection

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In a training (with an unnamed team), a canine handler passed 2 meters from a subject without seeing the subject. Canine made the find a couple of minutes later. Subject was wearing black pants, a camouflage jacket (in the image), and sitting on a red fanny pack (in the image).

At the point of close approach to the subject, the handler's attention was on the canine, who was in scent and showing untrained alert behaviors.

The yellow dotted line is the handler's track – coming towards the subject from back center, then turning to exit on the left side of the image.

What can we learn from this?

Search Crucials

- Search is an Emergency
- **Search is a classic mystery**
- **Search for clues not just the subject**
- Know if the subject leaves the search area
- Grid search as a last resort
- Manage by objectives
- Search management is information management



Search is a classic mystery – clues lead you to the subject.

Search for clues not just the subject.

Search for Clues not just the Subject

- One subject, many clues
 - Around 3000 clues per mile when walking [Mantrackers, Tracking/Trailing Dogs]
 - Scent plumes [Air scent dogs]
 - Dropped articles [Clue aware searchers]
- Clues can give:
 - Direction of travel
 - New last known points
 - Shift of priorities of areas to search



All sorts of clues – subjects leave lots of them – around 3000 per mile.

Clues can shift the focus of the search.

Clues may tell us that a crime has occurred.

Clues can be

- Seen
- Heard
- Elicited in investigation
- Felt
- Smelled

Clues come in many types.

Examples?

What needs to happen between your hearing a whistle in the field and that sound being a clue helpful to the management of the search? (it needs to get written down, it needs to get communicated (it needs to get recorded on a clue log, it needs to get followed up on...))

Subject may:

- Walk, leaving sign
- Drop things
 - Litter
 - Candy wrappers, drink containers, food wrappers
 - Hypothermia and paradoxical undressing
- Leave messages
 - Trail registers, route plans, suicide notes
- Bivouac

Subjects have behaviors that create clues.

Investigation feeds into clues – knowledge of what brands of candies, cigarettes, foods, etc that the subject might drop let us identify specific bits of litter as potential clues.

Clues feed into investigation – notes left by the subject can give new directions for investigation.

Why would someone drop their hat and jacket and gloves in the woods in the winter?



Is this a clue?



How about this?

Does the subject smoke? Does the subject carry a lighter in their camping gear?

Information elicited in the investigation – lost person questionnaire.



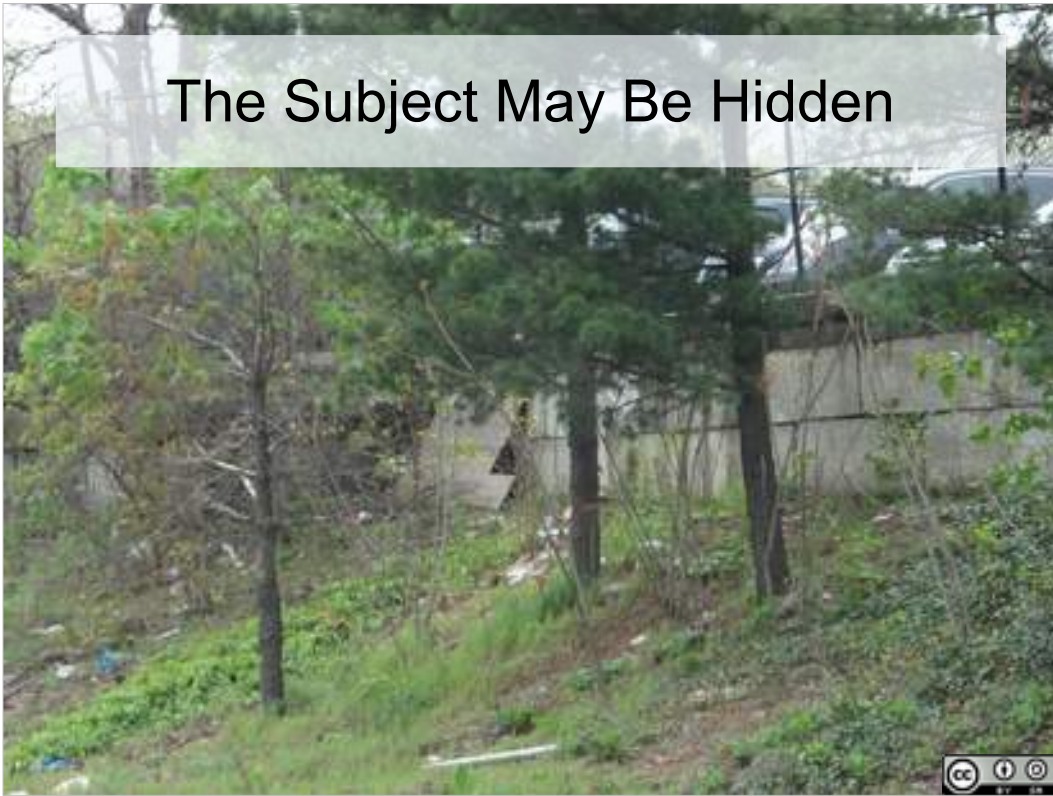
What do you think when you encounter a pile of clothing?

Check Trail Registers



Hikers may leave a record in trail registers – and other hikers on the trails at the same time as the subject may leave contact information that can be followed up in investigation.

The Subject May Be Hidden



Where are hiding places?

The plywood sheet is a shelter used by a homeless person, Porter Square Commuter Rail Station, Cambridge, MA.

The subject may be hidden and not respond when their name is called (why not?)

Altered mental status, unconscious, dead, evading, child taught not to respond to strangers...

Hug-a-Tree instructions

- Tear a hole for your face in a large plastic garbage bag.
- Pull the bag completely over yourself, leaving your face exposed.
- Sit next to a tree.

Subjects may be sheltering in a dark plastic bag – that's one of the preventative SAR messages, carry a plastic bag in your pocket or pack for expedient shelter.



Subject in a plastic bag under a tree.

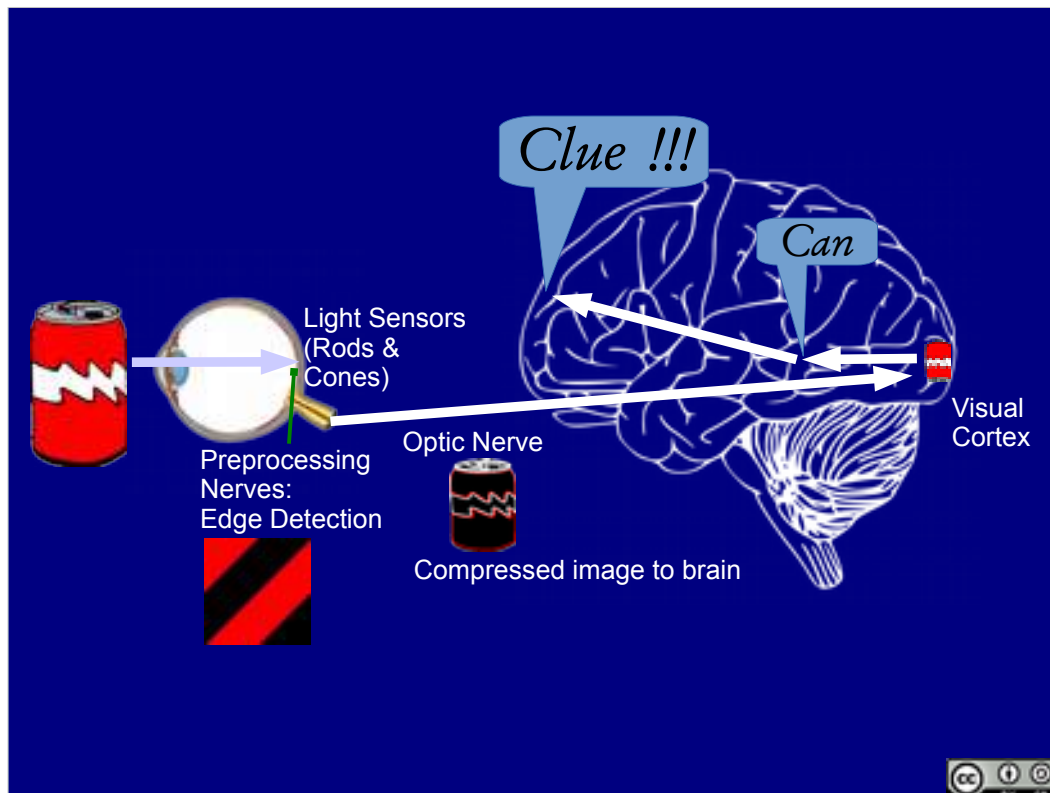
How do you observe things?



How does clue detection work?



What is the sequence of events involved in your observation of a clue?



Lens in your eye focuses an image on the back of your eye.

Light sensing cells (rods and cones) detect the light and pass the signal to a layer of nerve cells in the back of the eye.

These nerve cells pre-process the image, particularly detecting edges, and pass a compressed image down the optic nerve to the visual cortex at the back of the brain.

The image from the eyes is processed in the visual cortex, and objects are identified and labeled further forward in the brain.

Meaning is then attached to objects in the forebrain – step from seeing to observing.

Teach your Brain to Observe



You can teach your brain to observe clues.

Be attentive all the time.



Kim's game is a classic exercise for improving observation skills.

Cover a set of 20 to 50 random articles with a blanket. Remove the blanket. Let everyone look at the articles for 60 seconds. Cover the articles again.

Have everyone write down a list of all the articles they remember.

Practical Evolution 1: Kim's Game. (carry out here or at end of unit).

Include clues in regular training evolutions

- Clue specific
 - Kim's Game
 - Type I, Type II, and Type III searches
- Add clues to Canine training evolutions
 - Leave clues along trails
 - Leave clues along likely grid lines
 - Leave clues along exit route from subject



Regularly include clues in your training evolutions.

Use specific clue detection evolutions

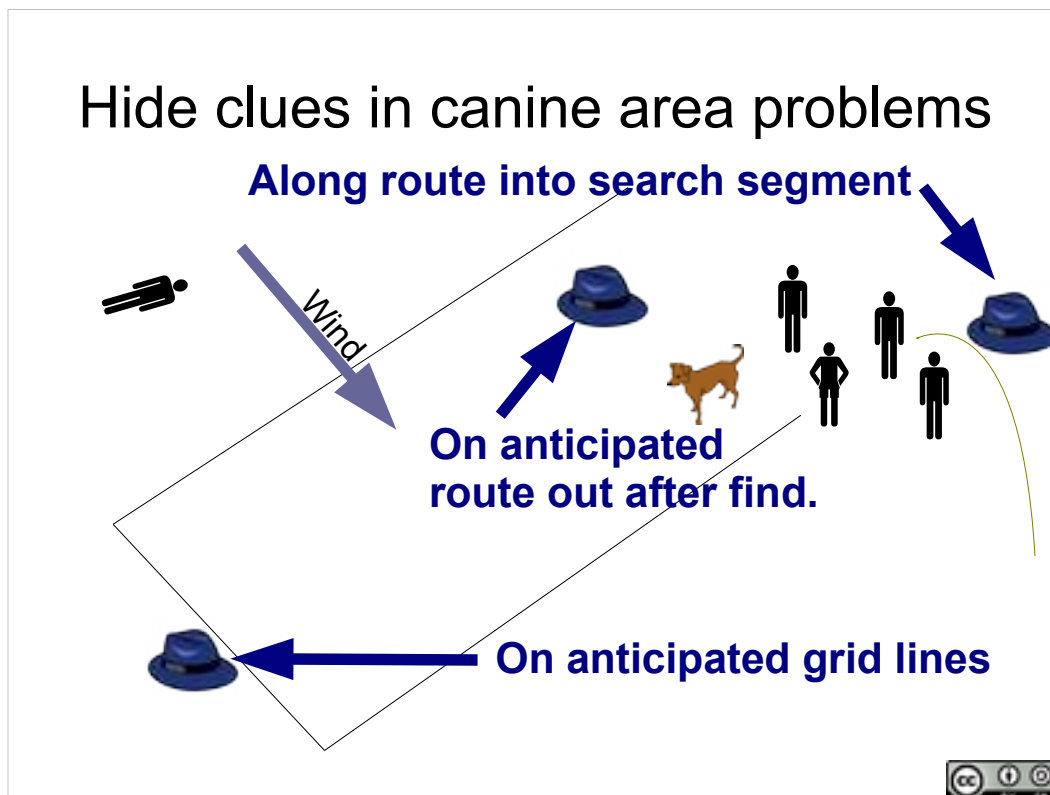
and

Leave out clues in other evolutions – particularly in canine evolutions.



Canine route problems are ideal for adding clues – if the subject travels out on the route, have them leave some clues along the way.

Be judicious in including clues in canine training evolutions. Don't include clues in specific short evolutions where the goal is to teach the dog a specific behavior, and where the handler being distracted by the clue could cause the dog to fail.



Canine area problems are a little more chancy for clue detection – the humans of the task force may not pass near a clue dropped in a random location in the search segment. Routes in to the search area, anticipated grid lines, and anticipated routes out of the area after the find are good places to consider.

Techniques

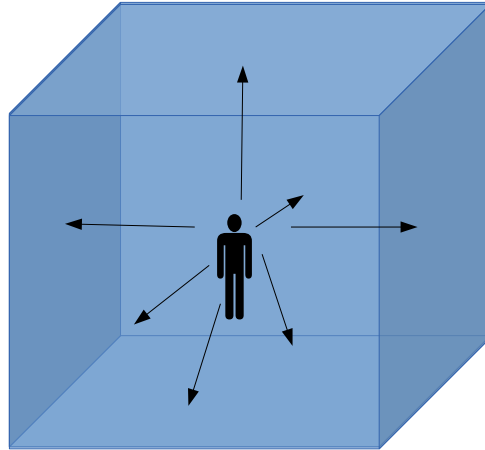
- Search Cube: Look behind you, above you...
- Stop to look
- Scan near, middle, and far distances
- Look through foliage
- Stop and look after a distraction
- Look below vegetation
- If you are talking you aren't searching



There are also strategies that you can follow to improve your ability to see and observe clues.

This list is empirically supported (Koester et al, 2004, Sweep Width Estimation for Ground Search and Rescue), except for not talking which didn't have a clear effect on visual detection, but which is generally considered good practice and will affect auditory detection.

Search Cube



While you are searching, think of yourself in the center of a cube. Actively look at all 6 faces of that cube – in front, right, left, above you, below you, and behind you.



When you see a bush or trees, don't let your eyes focus on the leaves and trunks, look past them into the spaces beyond.

“It isn't the trees that are missing”



Put your attention into the spaces between the leaves – what do you see?



Take a Knee.

Kneel down and look beneath things.

When there are ferns or other vegetation, get down and look under the leaves.



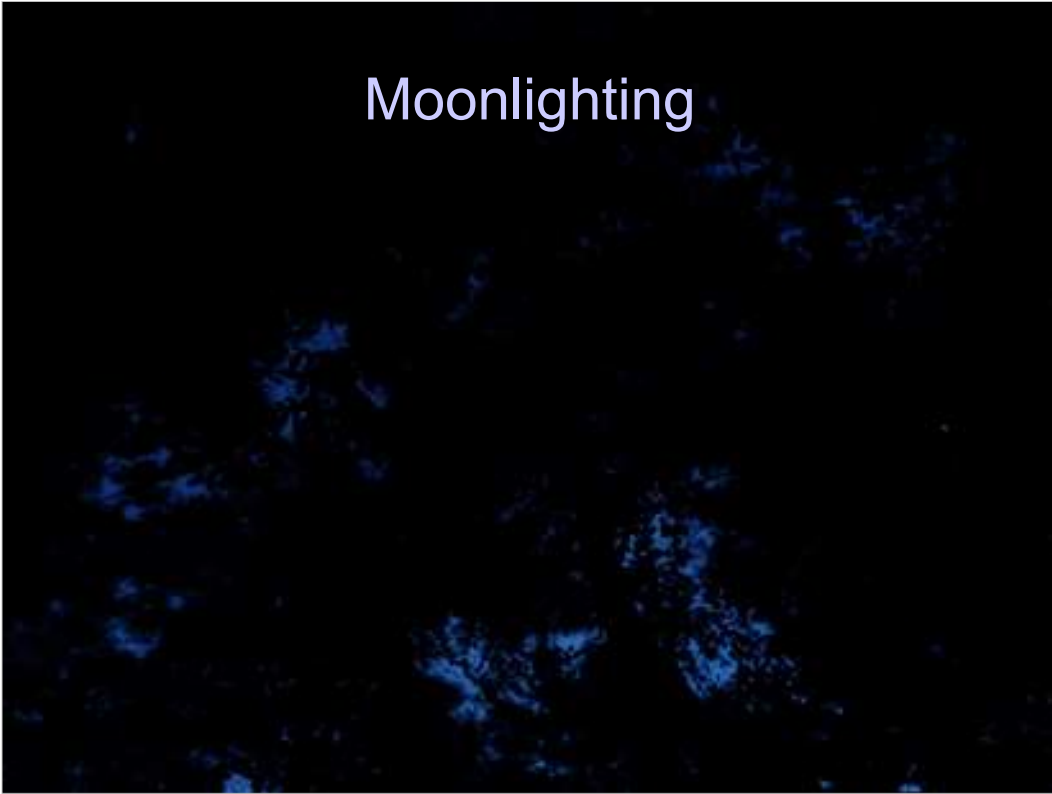
Clue hidden in a search segment in a MA SAR Exercise, and missed by a type II grid search team.

Clue was hidden low in an attractive pile of boulders – purposefully wander and Take a Knee.

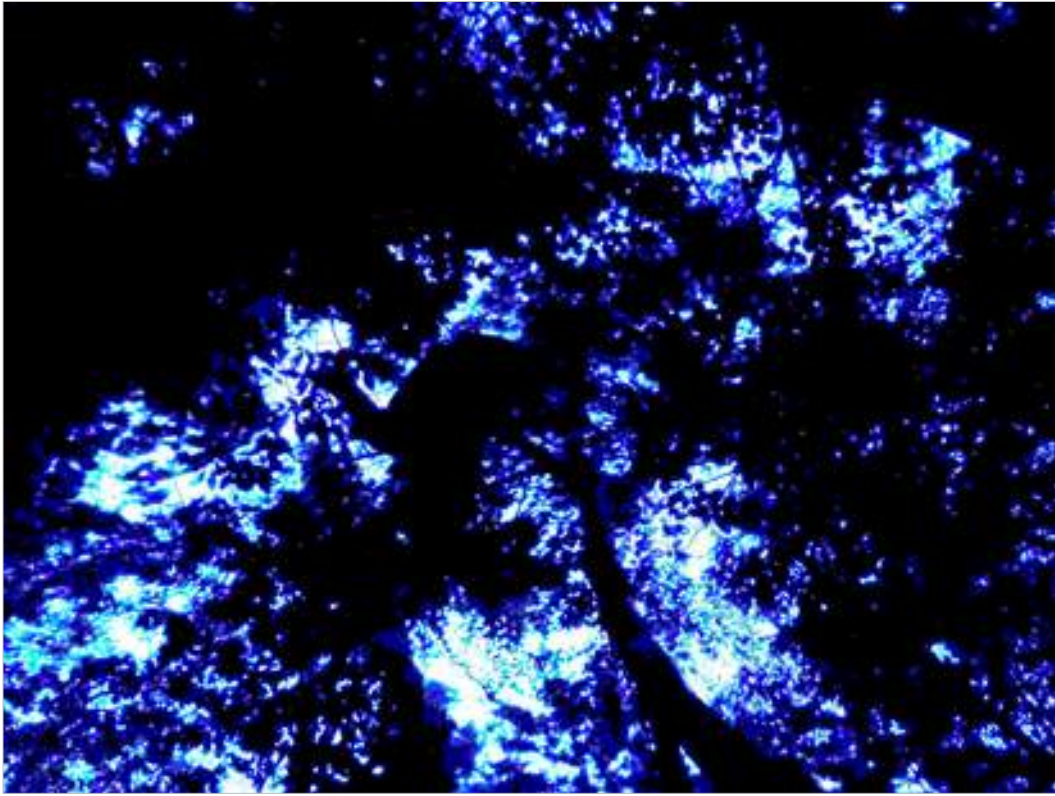


Divide the world into near ground, middle ground, and far ground. Actively look at each of these separately. Spend some time focusing on the near ground, then on the middle ground, then on the far ground.

Moonlighting



At night, look up and move your head.



Silhouetting things in the trees against the lighter sky.



While traveling trail systems or places where a subject may have traveled, look for places that are likely to retain sign from the subject's passage.

Check these track traps for sign, and avoid destroying sign.

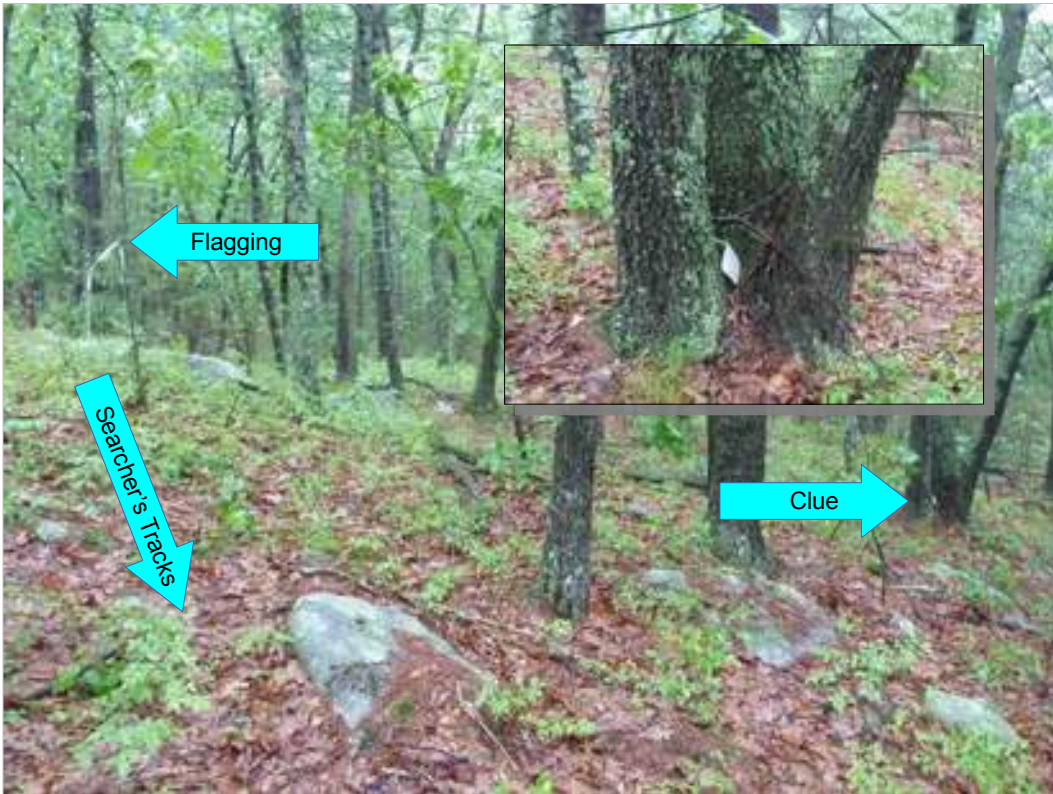


Low muddy spot in the trail – don't follow the path of least resistance, walk around the edge and check the path of least resistance for sign.



What do we see?

Check track traps. Don't walk straight through them.



Behind, Behind, Behind

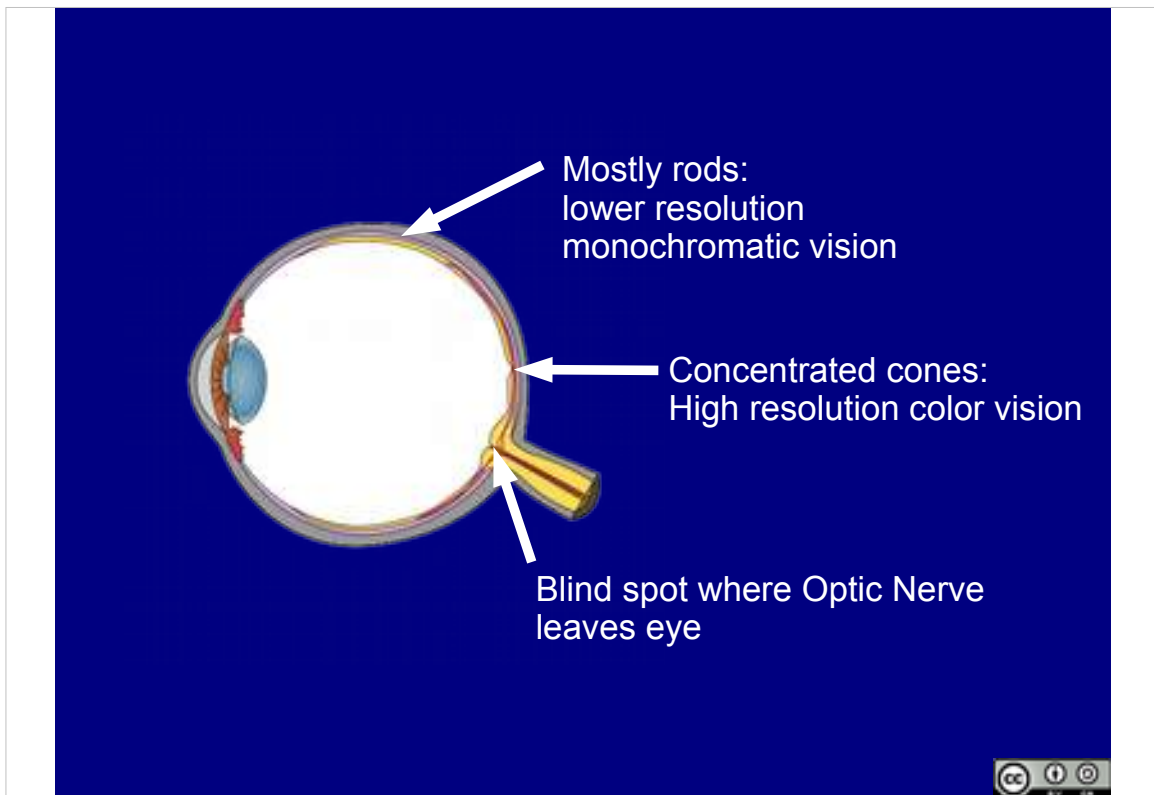
Look at all 6 faces of the search cube.

Look behind you.

Clue hidden in a search segment in a MA SAR Exercise, and missed by two searchers a type II grid search team.

What else is here?

There is a track of disturbance in the leaves from the left to right of the image from the person who was hiding the clues. The searchers also didn't see the lines of disturbance in the leaves. Be track aware.



Knowing something about the eye can help us observe things.

Concentrated cones – high resolution color vision in center of field of vision. Moving away from there, fewer cones, mostly rods, lower resolution black/white vision, processed for motion detection.

Also, not of particular significance, small blind spot where the optic nerve leaves the back of the eye, processed over so we aren't aware that it is there.



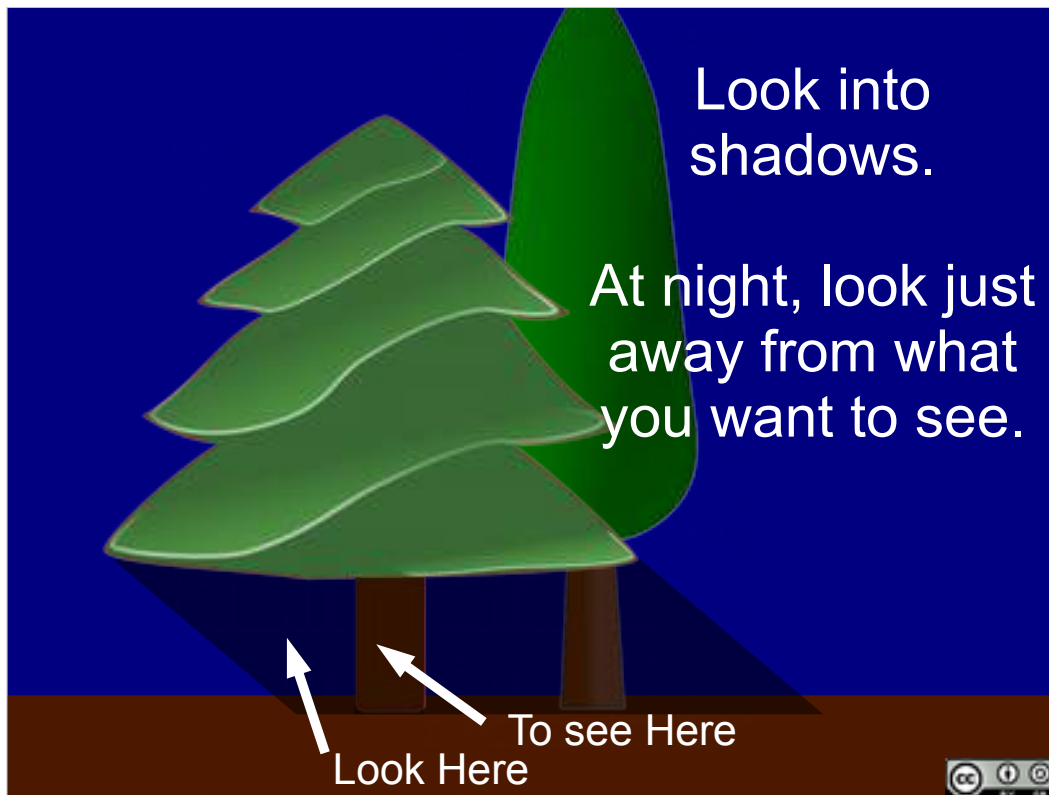
We think we see this.

Look at the puppy's nose.



At one moment in time, one eye is seeing something more like this – sharp and color in the center, fuzzier and monochromatic at the edges – with a tiny blind spot, and with edges enhanced.

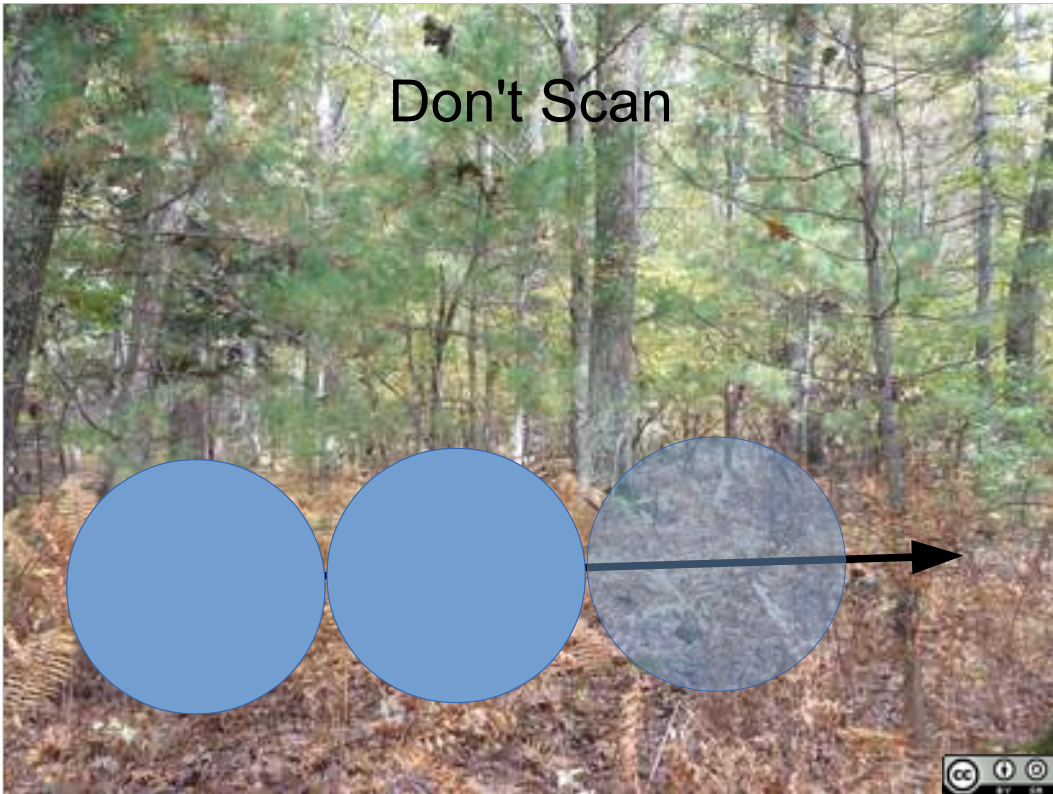
Your eyes are constantly moving (even when you think you have them focused on something), and your eye and brain are assembling what you think is a uniform colored sharp image.



Rods (black/white vision) are more sensitive than cones (color vision).

Fewer rods right at the center of our field of vision.

At night, we can resolve details a little better when we look slightly away from things we are looking at.



We get a better chance of observing things if we focus on them for a brief period of time.

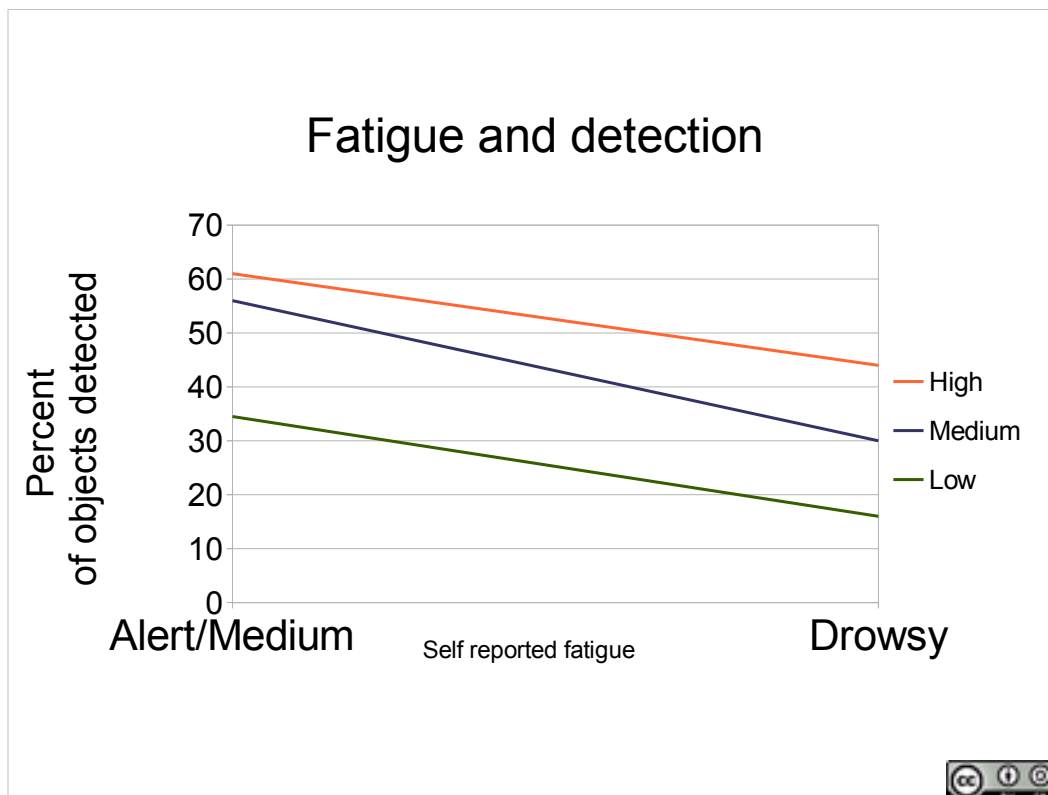
Instead of scanning your eye across the landscape, pause, move, pause, move, bringing attention systematically to bits of the landscape.

Look at an area about the size of a fist held at arms length. Allow your eyes to focus on that area. Now move to the next area the size of your fist, sweeping across the area you are scanning in steps.



The behavior of a search dog provides clues.

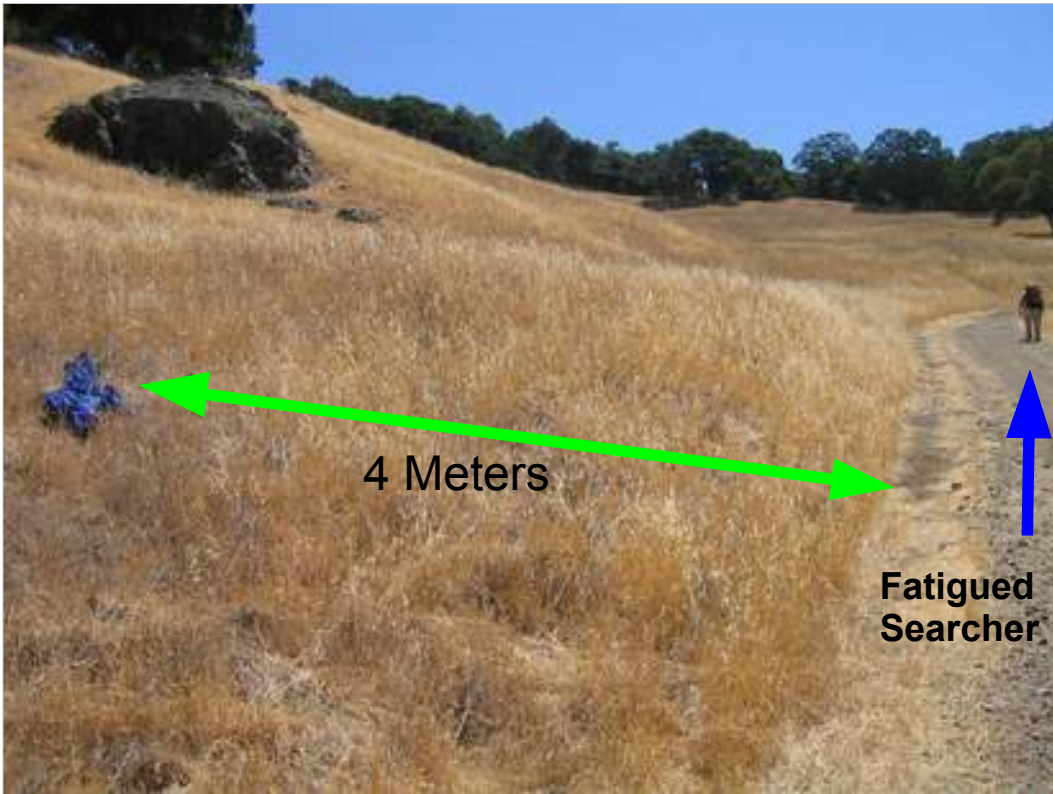
When an air scent dog shows behaviors that you know are associated with it working human scent (not the trained indication behavior, but the untrained alert behaviors), shoot a compass bearing on the wind direction and record the location and wind direction.



Fatigue is well known to decrease performance.

[Here is the effect of 'self reported level of fatigue' on detection, from Koester et al., 2004. Sample size is small (93 alert, 17 moderate, 3 drowsy), minimal difference between alert and moderate, take this as a graphic only, numbers have weak support.]

General principle is well known and well supported: Fatigue decreases peoples' ability to perform all sorts of task.



Object missed in sweep width experiment by a searcher who reported fatigue level as drowsy. Object is 4 meters from track.

Figure 8.10 from Koester et al., 2004. Public Domain

Related to Fatigue is Hydration: Drink plenty of water. Keep Hydrated.

Not being well hydrated also affects performance (and clue detection).

Upon finding a clue...



What do you do when you find a potential clue?

(1) Don't touch it.

(1a) Consider Scene Safety.

Upon finding a clue

- **Don't touch.**
- **Scene Safety**
- **Call out: “Hold the line”, everyone stays where they are, team leader comes over to determine what action to take.**
- Call it in.
- Record and flag the location.
- (More in Crime Scene Preservation)

More specifically – when you come across a potential clue, stop, don't touch it, call out “hold the line”, then the task team leader (nobody else) comes in to determine what to do.

Task Force/Strike Team leader calls it in and gets instructions.

Likely instructions are to record and flag the location.



Good flagging method, three long streamers of flagging tape.

Write assignment name/number on the flagging, along with date and time.

(often encounter single little bits of flagging tape in the woods).

Clue Log

- Maintained in the planning section.
- Log of all clues
 - What was it?
 - Where was it observed?
 - Who observed it, When did they observe it?
 - What follow up action has been taken?
- What clues haven't been followed up on?

Observing clues is important, also critical is getting that information recorded in the planning section, so that clues don't get overlooked.

Clues called in from the field or reported in debriefing go into a clue log.

One key planning question as the search continues and the subject hasn't been found is what clues haven't been followed up on yet.

Practical Evolution 1: Kim's Game. (carry out now if not done earlier in unit).



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