



This chapter is taken from the handbook that accompanies the Field Search Skills course. For further information refer to the section of the website relating to training courses.

CHAPTER 6 - SEARCHING AT NIGHT

In theory, searching at night is easier than searching in broad daylight. At night the torch-beam offers a limited area for the searcher's attention, and there will be little or no 'visual noise'. Paradoxically, in practice it is more difficult to search at night. The searcher is deprived of much of the visual information that would enable them to detect an object. Objects are generally reduced to uniformly dark shapes. Little is seen in the way of colour. The distinction between an object and its background will disappear if they are of the same tonal value, and the object will in effect become invisible.

You can see much more in the dark than you realise. However, to take full advantage of this ability it is important to understand how your eyes are constructed and how to best use them in conditions of poor visibility.

Your eyes are like a simple camera:-

- The *lens* focuses light entering the eye
- The *iris* opens and closes to regulate the amount of light entering the eye through the pupil
- The *retina* is like the camera film where images are formed. These are transmitted to the brain via the optic nerves. The brain tells us what we see.

The retina is made up of photo-receptors called *cones* and *rods*. The cones enable us to see colour, shape and contrast. A great deal of light is needed to activate them and they are 'blind' during periods of low illumination. These are your 'day' eyes. These cone cells are concentrated in the centre of the retina, directly behind the lens.

Rod cells are found mainly around the outside of the cone cells and these become active in darkness or periods of low illumination - these are your 'night' eyes. They allow you to distinguish black and white and general outlines. They are not sensitive to colour.

Principles of night vision:-

Dark adaptation - allow your eyes to become accustomed to low light. It can take about 30 minutes to achieve full night vision, though the eyes start to adapt (change from cones to rods) after about 10 minutes. The

rod cells produce a chemical substance or *visual pigment* (rhodopsin) which constantly renews itself. This makes them active and enables you to distinguish objects in dim light.

Off-centre vision - look at the object without looking directly at it. When you look directly at an object the image is formed in the cone region which is not sensitive at night. If you look slightly left, right, above or below an object the image will be formed in the area of rod cells. This is usually about 6 - 10 degrees away from the object.

Scanning - use *off-centre vision* to observe an area or object. When you use rod vision the visual pigment blacks out in about 5 to 10 seconds and the object observed disappears. As the visual pigment bleaches out in one area of the rod cells you must shift your eyes slightly so fresh rod cells are used. Move your eyes in short, abrupt, irregular movements over and around the target without looking directly at it. Pause a few seconds at each point of observation as your eyes cannot see while in motion.

A searcher needs two kinds of lighting:

- a personal light to enable them to see where they are putting their feet; this is typically a head-torch
- a searching light; this is typically a hand-held torch with a powerful beam

Lights should be used sparingly so as not to impair night vision. Also be aware of the obvious but often overlooked fact that the batteries in these do not last for ever; as the battery discharges then the light will diminish and less will be seen. Even the most powerful searching light is not much use by the end of a night spent searching.

Searcher discipline is important. If searchers are exposed to the light from a colleague's searching light or head-torch then their night vision will be seriously impaired.

The problem for the searcher is made even worse because of the difficulties of moving across the terrain they find themselves in. That will take more effort and attention than it would do in daylight. The amount of searching that can be done at night will be less than could be done in the same area in daylight. Searching will be more difficult and be

less rewarding for the searcher. Searcher fatigue will occur more quickly.

We need to have a clear understanding of what we can achieve by searching at night. Searching areas is difficult, will tie up a lot searchers for a long time and is unlikely to be successful. Searching areas is best avoided in the dark. If a search of a particular area is called for because it is exceedingly likely that it will lead to the missing person being found, then searcher spacing will be determined as described previously but using the torch beam to find Critical Separation. As many lost/missing subjects 'go to ground' at night the use of sound and light as a combined passive and active search tactic should be considered.

Searching at night should be used for:

- buildings / shelters / magnets
- tracks / trails / paths
- boundaries / fence-lines / walls / vegetation breaks and edges
- roadside ditches

A method that does work for searching paths, tracks and trails involves a group of five searchers. They move along the feature they are searching in single file, fairly close together and with responsibilities as follows:

- the lead searcher is responsible for navigation; using a hand-held torch they illuminate the route ahead and call out directions plus information about hazards
- the next searcher uses a hand-held torch to illuminate the ground close to the track on one side
- the next searcher uses a hand-held torch to illuminate the ground close to the track on the other side
- the last two searchers do the same but illuminate the ground at a distance from the track

The searchers need to know the distance at which they will be able to detect a missing person using their torches. That will determine how far out they shine them from the track. This information can be found from field trials along the lines of those described in the next chapter. Three searchers can use a similar technique to search along a boundary, but looking in one direction only. Training is essential.