

Chapter 6

Wind, Scent and Dog

The Nature of Scent

We cannot smell what a dog smells, but we can help a dog find an available scent. To do this you must know about wind, weather, and terrain. These three elements affect how much scent is available and where the scent travels. Your understanding about the scent available to your dog will also determine how your dog performs. If you do not believe a dog can detect the human scent on a track that is more than three hours old, you will not train for an older track or give your dog a chance to prove his ability. If you do not think a dog follows human scent at all, you will not train the dog to be scent discriminatory in the same manner as someone who does believe a dog follows human scent. Some people believe a dog follows the crushed vegetation; others feel the dog follows the dead skin cells that fall off people as they walk. Still others think the dog picks up on a combination of both human scent and vegetation. We don't know exactly what a dog does or does not detect when following scent. What we can determine is how the scent behaves.

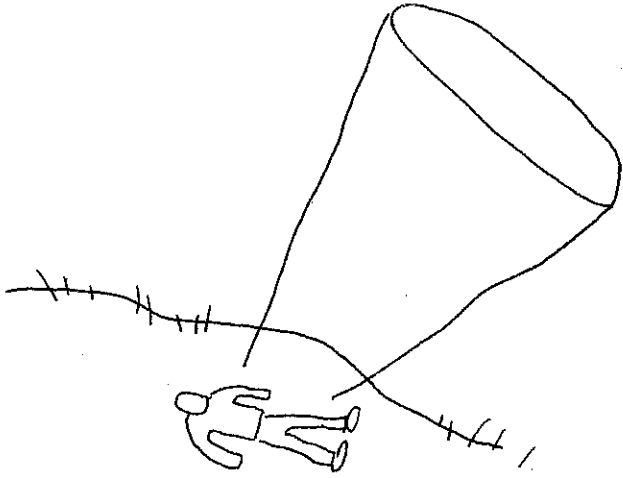
When SAR people talk about scent, they often speak of the scent cone given off by the victim. Scent-cone theory explains that the victim is the source of the scent, or the tip of the cone. As the scent leaves the victim, it fans out to form the base of the cone, becoming wider as it travels further away from the victim. It is the job of the search dog to seek the cone and follow it to its source.

In many respects, scent behaves in the same manner as liquids and smoke. Scent flows down a slope following the path of least resistance, such as a gully or drainage. It rises from its source, reaches a high spot in the air, loops back down to the ground, and collects in that spot. Scent can circle a number of times, leaving many pools of scent with no obvious line to the victim. The dog comes along, hits the spot, and cannot follow the scent to its source. Sometimes, if the origin of the scent is in a depression, such as a small valley, the scent can travel up the nearby slopes in much the same manner as smoke goes up a chimney. This is usually caused by the rise of warm air during the day, which carries the scent with it. The reverse can happen as the air cools and falls to the low areas, carrying the scent down with it, and trapping the scent in a drainage, or carrying the scent from a higher level down a slope to a low area. When this happens, the scent pools in the low area.

Terrain features such as tree lines, rock walls, and plowed fields can cause the scent to eddy, swirling around the trees, behind the wall, and traveling over the wall, leaking scent into a clearing. On dry, hot days with no noticeable breeze, the scent may rise straight up and the dog will not find the victim unless he walks over him. In rough terrain and in gusty, shifting winds, the scent can travel in many directions, collecting in nooks and crannies in the same manner as debris washed down a river. Scent clings to objects such as walls, brush, or low areas. If a victim is hidden in dense vegetation (especially vegetation with low broad leaves), it is possible for the scent to become trapped with little or no leakage.

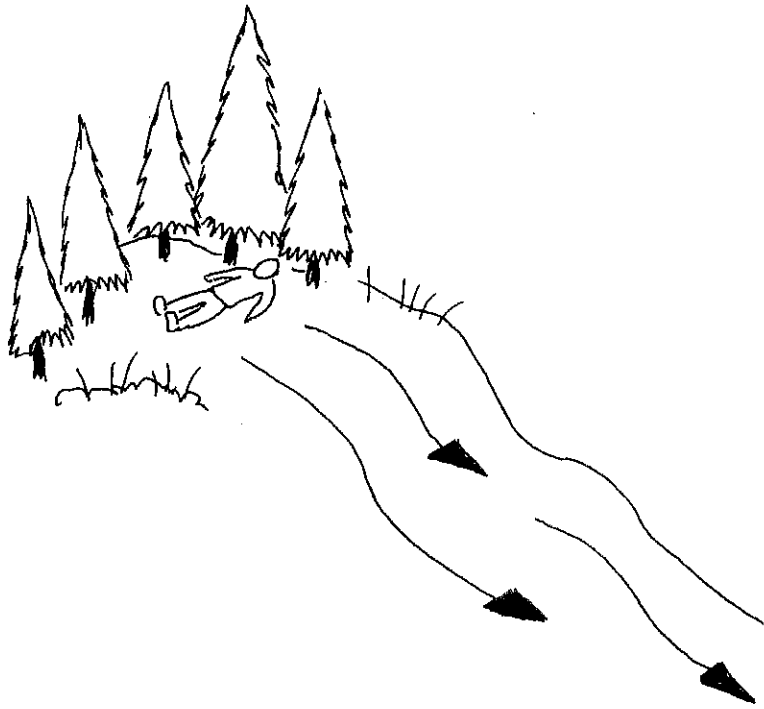
Humidity increases the availability of scent for a dog, and scent that has "dried out" during the day may "revive" in the damp of the evening and morning or after a light rain. The dampness releases what has soaked into the ground. However, a downpour will wash the scent away.

Early morning, evening, and night are the best times for the dog to pick up scent. During the day is the poorest time for the dog to work. In the morning, as the ground warms, the scent cone rises; scent from warm objects or warm areas rises in cool or cold air. It is best to work the dog above low areas so he can detect the rising scent. In the evening, the opposite takes place and the scent travels down or rises a little and then returns to the ground. This is the best time to use a dog since the most scent is available at ground level. It is

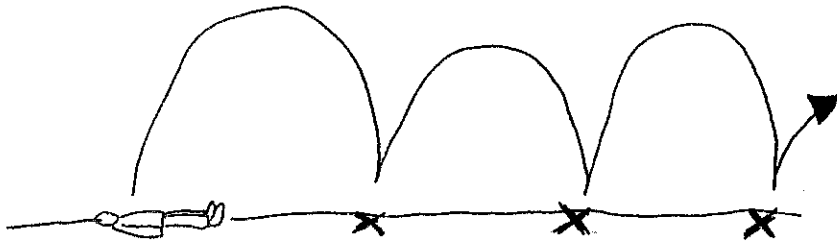


*An example of how the scent cone from a person rises and spreads.
Drawing by Joseph T. McNichol.*

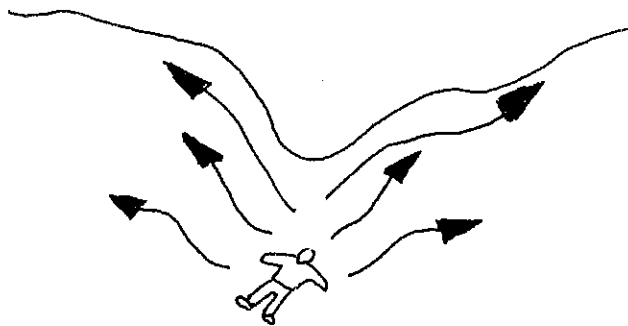
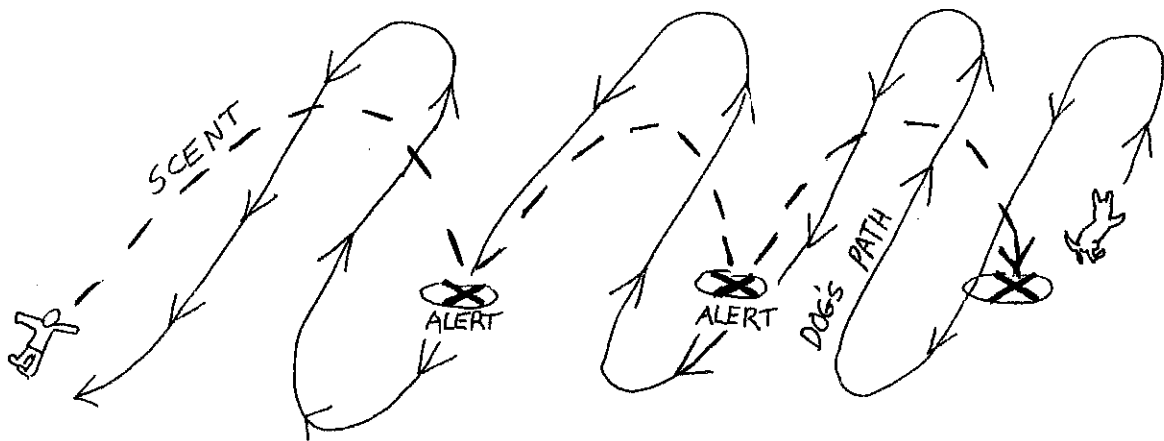
Much like water, scent will flow down a slope, following a path of least resistance. Drawing by Joseph T. McNichol.



Scent can rise from its source, return to the ground forming a scent pool, rise again and fall. This is called looping. Drawing by Joseph T. McNichol.



When scent loops, the dog may miss some of the scent pools and find others. By determining the wind direction and pattern of alerts, you can determine from which direction the source of scent is most likely coming. Drawing by Joseph T. McNichol.



When the scent source is in a depression, the scent can rise up the slope. This often occurs during the day when warm air will carry the scent up. Drawing by Joseph T. McNichol.

also best to work the dog in the low areas to catch the scent from the victim above you. If there is a cold layer of air with warm air beneath, the conditions that cause smog alerts and smoke to hang around in the air, the scent also rises and lingers. If a dog is working on flat ground, he may have difficulty detecting the scent, but if he detects scent on a hill or mountain and loses it above and below the scent band, it is good to check with the other dog teams working at the same level to see if they are experiencing the same thing. If so, the combination of Alerts can point out the direction to the source of the scent. If a victim is hidden long enough and scent pooling takes place (little or no breeze to move the scent around), the scent pool can saturate the area, making it difficult for the dog to locate the source of the scent.

Sometimes, there will not be much of a scent pool for the dog to detect, causing the dog to miss it entirely. When a victim is very still, as when the person is sleeping or passed out, he gives off much less scent than when he is moving. Also, scent availability is determined by the amount of exposed body. Thus, a person who has taken shelter, either in a plastic bag, space blanket, buried in the snow, under branches (especially leafy branches) and has fallen asleep, gives off a very small scent pool, even if he remains in one place for a while. In such situations, it is up to the dog handler to investigate areas in which a person could be hidden, or specifically send the dog into those areas.

As scent travels over an area, the terrain features can cause dead spaces to form where no scent has been carried. These dead spaces are in tucked-away areas the wind has bypassed. A dead area might be at the base of a sheer cliff where the wind blew off the top of the cliff and angled down, missing the base. Another dead space is where a strong breeze has blown the scent over a depression instead of into it. If the dog is following a scent and loses it, this could be the result of a dead space. Move on and try to pick up the scent again.



Scent can travel down a slope and collect in a low area. The highest concentration of scent will be in the scent pool in the low area. Drawing by Joseph T. McNichol.

The way scent travels and its availability depend on the weather, terrain, age of the scent trail and source, the condition of the scent source, the air flow, wind, vegetation, concealment of the source, and time of day you are searching. The combination of all these factors makes each situation unique. It is up to the dog handler to determine the conditions so he can understand how his dog reacts in various situations. Most important, the handler must analyze each situation to decide what his dog is communicating to him so he can

direct his dog to lead him to the victim. The dog and handler are a team, each with his specific job and expertise.

Test the Wind

When training for SAR work, it is important always to know what the wind is doing and which way it is blowing. Many exercises presented later in this book require you to test the wind. There are a number of ways to do this, and you should be able to use all of them. The easiest way to check the wind constantly is to use a *Bic*-type lighter. By watching the flame, which responds to the slightest breeze, you can determine which way the wind is blowing. When you test the wind, always test at eye level and again at the dog's nose level. In certain conditions and terrain, the wind will be different at each level.

Another way to test the wind is to use the small smoke bombs that are available for about 25 cents each. This is the most effective method to check how the wind is blowing from your victim to the dog. After the dog has found your training victim, have the victim light a smoke bomb and watch what the smoke does in relation to where the dog was working. It will help you understand what scent was available to the dog.

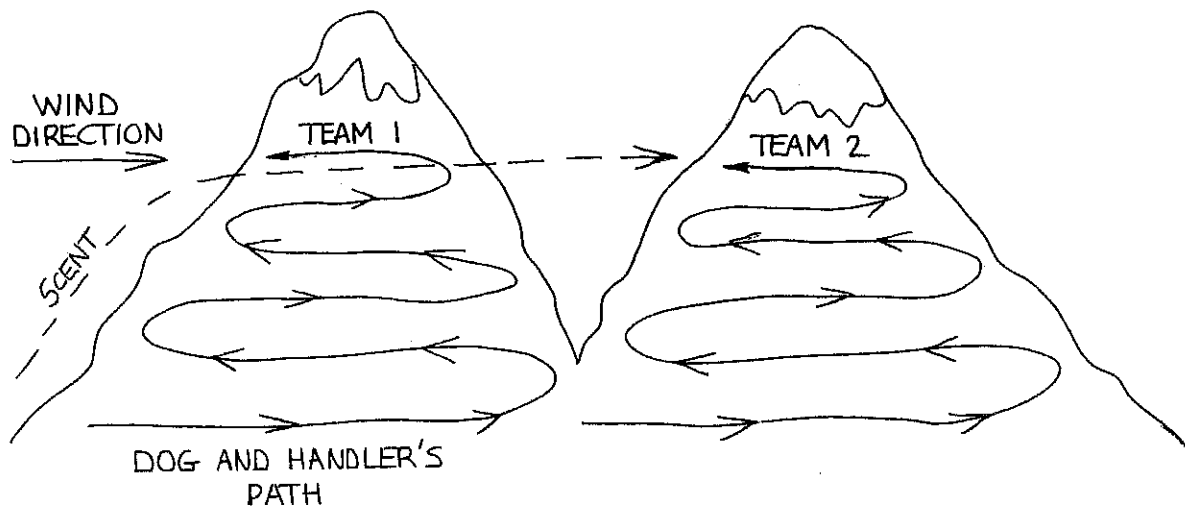
Another method employs a small, compressible object filled with powder. The device used to clean an infant's nose is good, or find something you can squeeze to expel a burst of powder into the air. Yet another method is to tie sewing thread around your finger or wrist, allowing enough to hang down to see which way the wind is blowing.

In disasters when it is not safe to use a lighter, use methods that are okay around flammable conditions. Whatever method you use, check the wind.

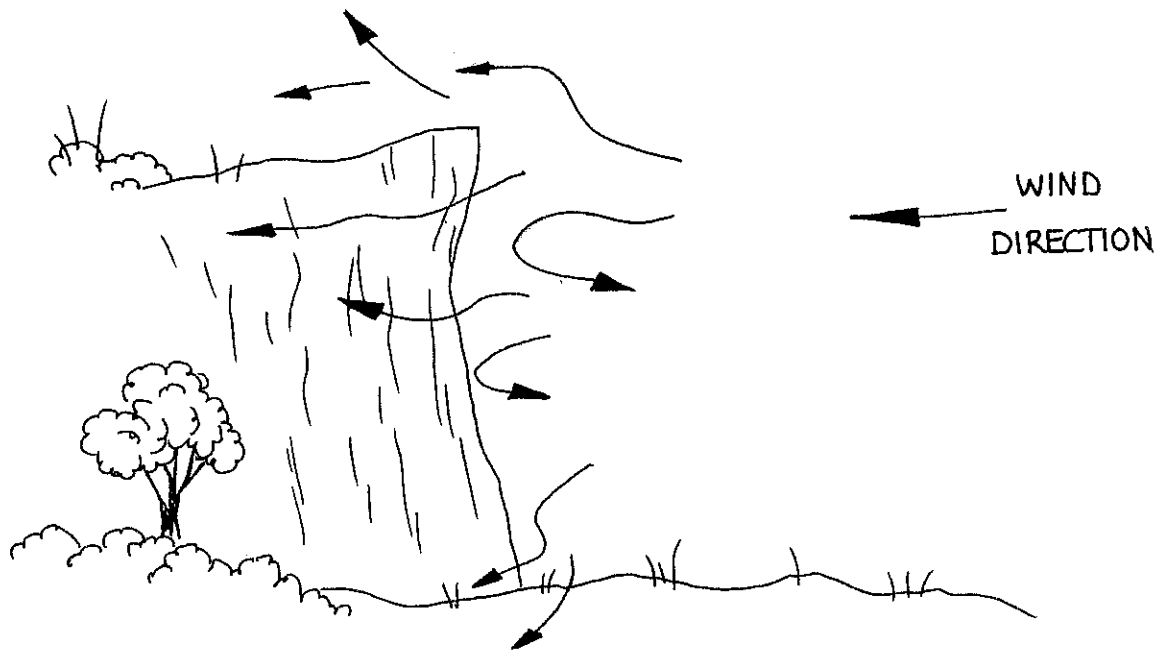
As a rule, the SAR dog handler works a dog perpendicular to the direction of the wind. This gives the dog the best advantage to pick up an available scent cone. By tracking the dog's Alerts, you can determine from which direction the scent is coming—providing your dog is going upwind (the dog is facing into the wind). With a steady breeze, working your dog upwind, you can accurately detect the source of the scent. However, in variable wind conditions and rough terrain, the source of the scent can be difficult to determine. In a variable wind, you can double grid an area, reducing the size of the search sector.

Both man-made and natural obstacles can cause the scent to eddy and swirl. Drawing by Joseph T. McNichol.

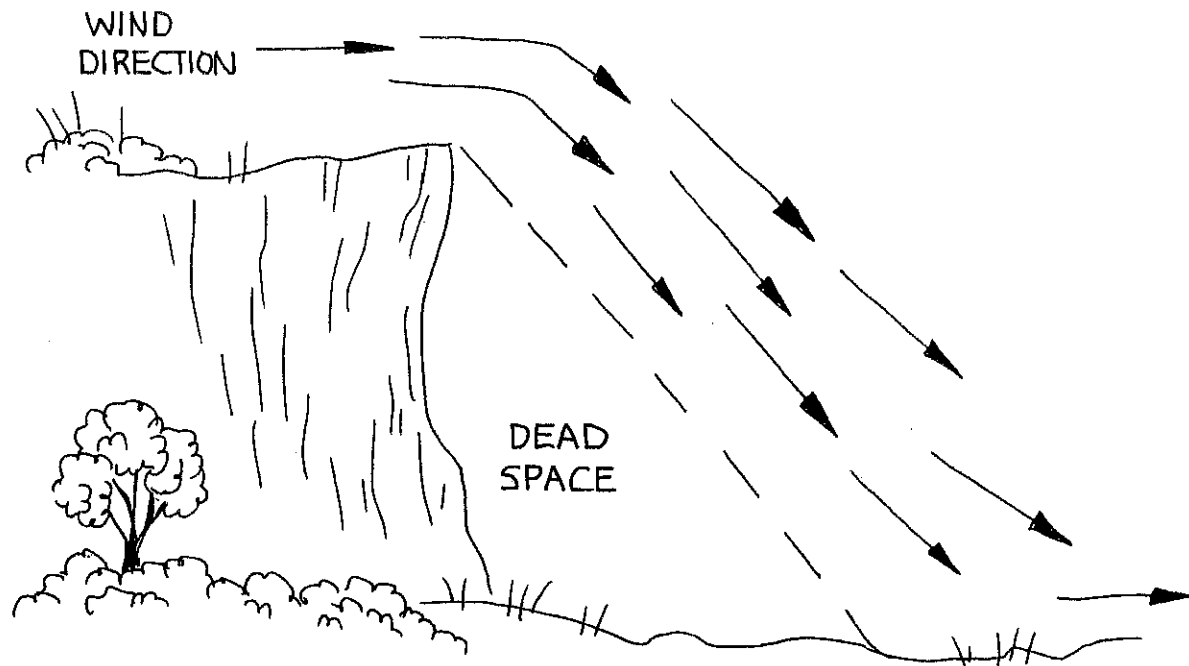




Cold air above and warm air below can cause a scent band to form. The dog will hit on the scent in the scent band. By recording the alerts of different teams working along the scent band, the Incident Commander will be able to determine where to concentrate the search effort. Drawing by Joseph T. McNichol.



If the wind is blowing into an obstruction (man-made or natural), the scent can be scattered. Drawing by Joseph T. McNichol.



When scent is carried over land features that drop suddenly, there can be a dead space next to the drop. Drawing by Joseph T. McNichol.