

Tracking in Four Dimensions

By Deborah Palman

My experience has been that traditional “patrol” police K-9 programs sometimes have a difficult time training dogs to effectively follow older tracks. I suspect that some of this may be due to a lack of training time devoted to tracking and trying to teach dogs too much at once, but I also think that many patrol programs don’t approach tracking training correctly. Over the years, I have come to conclusions about tracking and track scent that explain why different tracking training programs produce different results.

These conclusions are based on my observations that:

- Dogs can be trained to track people on tracks that are at least days old, possibly many days old under some conditions.
- Dogs can be trained to follow the scent of a particular person and stay with that scent on the track so that they follow that person only. They can follow this scent no matter how many other tracks or contaminating scents are in the area.
- Dogs can tell the relative age of a track. Under most conditions, if trained to do so, a dog can determine the direction a tracklayer is traveling. They would be able to do this by being able to sense the relative age of the scent on portions of the track. In other words, if the dog is moving in the same direction and speed as the tracklayer, the track will appear to be of constant age because the dog and tracklayer are moving in the same direction. If the dog goes opposite the way the tracklayer is going, the dog will be encountering scent that is getting older because of time passage and because the tracklayer was traveling in the opposite direction.
- Dogs do what they are rewarded for, or, put another way; dogs do what they are trained to do by their handlers or trainers.

Many police K-9 handlers hesitate to work tracks that are more than a few hours old because, in their experience, they have been unsuccessful on older tracks. However, real world evidence from bloodhound teams, police tracking teams and search and rescue teams shows that, when trained to do so, under all but hot and dry conditions, dog teams can consistently and successfully follow tracks that are 12, 24, 48 and more hours old. The National Association for Search and Rescue standards for tracking/trailing dogs have tracks of 18 to 24 and 24 to 30 hours old. I feel that the reason most patrol K-9 teams cannot do tracks 12 or more hours old is that they do not train for these types of tracks.

Tracking Theory

I’ve read the theories on crushed vegetation, ground disturbance, body scent, air scent, etc. and have concluded that we really don’t know exactly what the dog is smelling when he tracks. The dog probably smells all of these things and they are all there.

Recent information indicates that fatty acids and oils are unique to different people and may form a component of what the dog is following. Rather than debate what the dog is following, I just accept the fact that dogs can be trained to follow a certain person a long time after they walk through an area.

Therefore, if the places we train are frequented by people, or we track in the same places day after day, the ground is literally covered with different tracks of various ages. In other words, in everywhere but the deep woods of Maine (where I get to work), there are tracks everywhere. If you go out and lay a track, then that track is being laid in an area that already has plenty of tracks around. How is the dog going to pick the track you want?

When thinking of tracks, it helps to think in four dimensions. I usually think of tracks as something like lines on the ground or on a map. On a map, if one track covers up another, the track underneath is hidden from sight. This is thinking in two dimensions. However, to a dog's sense of smell, the track underneath is not hidden. It helps to think of the multitude of tracks out there as being in layers, like three dimensions, and understand that contamination does not "cover up" other tracks. All the tracks are still "visible" to the dog's nose due to the third dimension.

The fourth dimension of tracking is time. This is the dimension we neglect the most in tracking training.

The Fourth Dimension of Time

Back to the question of how does the dog know which track to follow. In many training sessions, I have seen handlers and trainers so concerned about contamination that they avoid having other people cross their tracks before they run the tracks with a dog. If there are hundreds of tracks already out there from tracks run and people walking through the area for the last week, then how is the dog going to select the track you just laid for training?

If a dog is trained in a method that avoids fresher contamination, the dog will probably learn to choose the freshest track, or the track with the least time on it, because that is the one he is rewarded for taking. An exception to this would be a dog that has learned to start with a scent article and follow the person represented by the scent article. In other words, if you train without a scent article on "uncontaminated" tracks that are less than an hour old, your dog will select tracks less than an hour old or the freshest track. This is because, in training, when faced with the choice of all the tracks from the last week and the freshest track, the dog has always been rewarded for following the freshest track.

Bloodhound or Tracking Specialty Teams

Why are well-trained bloodhound teams and well-trained specialty tracking teams of other breeds able to complete older, contaminated tracks? Because they train for scent discrimination and train for older tracks. Since I have seen dogs of several breeds in our department (Labradors and German Shepherds for example) complete search and rescue tracks that are 12 and 20 hours old, I know that success on older tracks is more a result of training than it is the breed of dog. Successfully completing older

tracks involves the ability to communicate to the dog that it is the individual scent that is important, not the age of the track. This means extensive and consistent work with scent articles, starting the track with the right scent picture in the dog's mind, and working older tracks in contaminated areas. Once a dog understands that the handler wants a particular person, and the handler learns how to communicate this to the dog effectively in all sorts of situations, the progress of the team on all ages of tracks becomes possible.

Why do many "patrol" dog teams fail on older tracks? I can't speak for all programs, but many of the patrol teams I have observed training do tracks that are relatively fresh without teaching the dog to use a scent article or target a particular scent. Seeing this type of training with a four-dimensional outlook, it becomes apparent that the dog is being trained to choose the freshest track. At a scene, the freshest track may be the suspect's, or it may be the responding officer's, or it may be someone who just walked by. It is true that many experienced patrol dogs will pick out "fear scent" and be successful, but usually "fear scent" does not exist in search and rescue situations.

How about starting a track from a footprint at a crime scene? When I think of this, I see a picture in my mind of one to three other officers standing over a footprint from a suspect. They call a K-9 team and direct the K-9 handler to the footprint, once again standing over it to point the track out. The K-9 handler tries to start his dog at the footprint and the dog doesn't take the track. Which scent is the most prominent on the footprint after the officers stood around it? As they stand over and near the footprint, the individual scents of the officers are drifting and landing on the footprint. The scent of the officers who found the footprint is now probably the most prominent, so unless the K-9 has a chance to eliminate those officers and figure out the suspect's scent is the one to follow, how is the K-9 going to know who to track? A better approach would be to cast the dog in an area where the other officers have not been, but the suspect is likely to have been, or to find something at the scene that was touched only by the suspect to start the dog.

We also have a tendency to track the same people at training because that is easiest. Maintaining dog teams in tracking, evidence, building search, apprehension work, obedience, narcotics, etc., etc., takes a great deal of training time. At training, it becomes easiest to have the same people you train with all the time lay tracks, and tracks are sometimes squeezed in between other training without a great deal of pre-planning. Unfortunately, this can cause the dog to prefer tracking the people he knows, especially if he is a social or pack driven dog. Handlers have to find people outside of their training group to lay tracks. To train a good tracking dog, you have to spend as much time at tracking as you do at obedience and bite work combined. Working older tracks also requires a great deal of pre-planning and work to set up tracks the day before the training day. It might be better to devote a special day to tracking and arrange for a new location and new tracklayers to help (like a local youth group).

Tracking Choices

Some training programs may not want to train dogs for older tracks. The urban dog team that responds to hot calls may want the dog to air scent and choose the freshest track. If they never respond to anything less than an hour old, then there may be no reason to work with older tracks.

Our department's dogs are usually responding to tracks that are three or more hours old. Some of the tracks are relatively uncontaminated, but most of the search and rescue tracks are heavily contaminated and often a day old. Our tracking dogs face a variety of situations and I have found that careful and consistent scent discrimination work allows our dogs to work older and fresher tracks successfully. Once the dog understands the concept of having the handler present a scent to track, it is up to the handler to pick the scent source. With a stolen vehicle, this may be the car seat or brake pedal, at a burglary it may be evidence left at the scene or a doorknob, etc. With a lost person, usually the family can give the team a scent article.

Success in Tracking

Even the best of tracking dogs are not successful all the time. Scent at scenes and tracks can become so complex that they present situations to the dog that cannot be solved. Recently our search and rescue dogs went to the scene of a lost mentally challenged man who spent his time in the woods picking up sticks and putting them in a cart. He would do this for hours at a time, picking up one stick, carefully placing it in proper alignment in the cart, then going to find another stick, etc. He was last seen headed into the woods at 15:00 and the dog teams were called at 19:00. The area was also totally contaminated by family and volunteer fire fighters searching the area. The scent discriminating search and rescue dogs started tracking from the man's cart, filled with sticks, but the dog teams just went back and forth and back and forth, stuck on the many loops he made while finding sticks and stacking them in the cart for who knows how many hours. For some reason the dogs were not able to break out of those looping track patterns that night. The man was found the next morning, about a quarter mile from the cart. Foot searchers had walked right by him in the dark because he would not respond to their calls. The dog teams never got close enough to find him that night.

I believe that the general-purpose police dog can become very proficient in tracking older tracks if trainers and handlers do more than just lay a track to run fresh during the last part of the training day. To insure success in tracking, I recommend the following:

- Choose a dog with good "hunt drive" or the desire to use his nose to find things, and a dog that is less reactive or able to focus on specific tasks without being easily distracted. "Good nerves" is the common term used for dogs that are not easily affected by the environment and have confidence in all situations.
- Lay a strong foundation in basic tracking so the dog is motivated to track, and the dog learns how to execute tracks, including searching for and picking up the track, following the track in the proper direction and making corners and handling different types of terrain. Dogs aren't born knowing how to track. They have to learn that following one scent is important, that losing focus (being distracted) or being too hasty can result in a loss of the track, and that track direction is important. It is only through training that dogs learn what types of tracking and scent are important to us.

- Set up a starting ritual and motivation for tracking so that, when the ritual starts (for example, when the tracking harness and lead come out), the dog is eager to start and looking for a scent article or direction from the handler on what scent to take. Remember that non-verbal cues (equipment, tracking grounds, etc.) and context mean much more to the dog than any verbal commands.
- Forget about contamination, assume the whole area is contaminated and lay the tracks according to the dog's ability and needs at the time. Be sure to emphasize scent discrimination at the start. Seek out contaminated areas if the places you usually train don't have contamination. Contamination is only a distraction to the dog, not a barrier to tracking.
- Set the tracks up so the dog can succeed without help. If the handler has to help the dog, the dog will rely on the help and learn to read the handler. The handler may assist by taking the dog back to a known point or casting the dog in areas the track exists, but the dog must acquire and follow the track on his own to be successful. If the dog gets distracted and doesn't work out a track he should be successful on because he just isn't trying, it is not improper to stop and put the dog up for not working as he should. I know a search and rescue dog who regularly earns her daily meal by tracking and is very serious about her food. Once she learned that being distracted, going too fast and missing corners when she should not resulted in a loss of dinner, she straightened right out. Many dogs will let the handler do the work if they can.
- Tracking problems are usually due to poor motivation or communication, the handler helping the dog too much and the handler or trainer not systematically introducing variables into tracking training (difficulty, time, surfaces, distractions, etc.). It is almost never due to lack of scent or contamination. Remember, the scent is there, it is up to the trainer or handler to communicate to the dog what to track.
- Do tracks of various ages and various difficulties. Don't get stuck in a rut or routine on training day. When starting training, work on one variable like starting, discrimination, age, length, terrain change, corners, etc. until those variables are mastered. Then combine them into longer and more difficult tracks. If you only have a short time to train, then work on short problems that emphasize one point, like starting in contaminated areas, starting from a vehicle, aged tracks, etc. Work situations found in real life, like mock burglaries with contaminating officers, etc. Challenge the dog to make decisions.
- Track as many different people as you can. A training track can have a toy or food container left on the ground at the end which helps to keep the dog from hunting visually, or a handler can run a track, carry a reward with him and just stop and reward the dog at any point the handler chooses. I know one city police officer who used to sit in his vehicle, observe people on foot leaving a local store and returning home, then get his dog out and "run" the track of the person he observed, rewarding the dog at the person's apartment door. With a short track with a toy at the

end, almost anyone can be recruited to lay the track and leave the toy for the team to practice later on.

- Know where the training tracks are but don't communicate this to the dog. Since dogs are expert readers of body language, this usually means going out of your way to act as if you don't know where the track is, or the dog will know by where you look, the direction you face or the amount of lead tension used where the track is. Eventually run training tracks where the handler doesn't know where the track is but someone who knows the track accompanies the team and can act as a coach. Don't try to hold the dog right on the footsteps when tracking because the individual scent drifts with the wind and may be more available to the dog away from the footsteps, especially on older tracks. I feel that many dogs with good noses learn to track on the edge of the scent and track more by knowing where the scent ends than by knowing where its concentration is greatest. Read the dog and let the dog teach you where the scent is.

Successful tracking requires hard work, planning and analysis of what the dog needs for training. The good news is that the scent is there to track; we just have to teach the dog to track and then communicate to the dog which scent to follow. With proper training, tracking dogs can accomplish much more than most of us realize.