SCENT
A Discussion of Game Birds and Bird Dogs
By
Martha H. Greenlee ©

I couldn't get Mike's comments out of my mind. We had been talking about scent at a field trial last spring, and he had remarked that if we could smell what our dogs smelled, we would be overwhelmed by the odors that surround us. Occasionally, I have wished for a dog's ability to smell, curious to experience the real odors of game birds as well as to understand the conditions when scenting is good, but I never imagined myself being bombarded by smells.

A couple of weeks later I told Mike that I wanted to interview him for an article on scent, and he suggested including a colleague, Tim Smith. Mike and Tim are Physical Anthropologists. Both do professional research on the anatomy and physiology of the head in a variety of animals, and, more importantly, they are avid bird hunters. While Mike and Tim made it clear that they could not back-up a discussion about scent with science (results of field or laboratory studies), they would bring their expertise in anatomy and physiology into the discussion, especially since they often spent hours talking about their dogs' behaviors after a hunt. In preparation for this interview, Mike recommended that I read H. B. C. Pollard's classic book on scent, *The Mystery of Scent*, Eyre and Spottiswoode, London, 1937. This book has been invaluable in preparing for the interview, and I have quoted sections from it in our discussion.

In early November, Mike, Tim and I gathered around a table in the clubhouse at a field trial to discuss scent. What follows are excerpts from this

discussion. It is easy to underestimate the work that our pointing dogs do for us when we do not understand scent. Hopefully, our conversation will shed new light on this complex subject as it pertains to game birds and bird dogs.

SCENT

Will scenting be good today? This is a question hunters often ask themselves before going afield. Once in the field our dogs tell us when scenting is good by pointing their game confidently and at good distances. Our dogs tell us when scenting is bad by bumping birds or going birdless. While scent may seem unpredictable, we can learn to recognize good scenting conditions from poor ones by understanding the factors that affect scent. But before we can talk about conditions, we should understand how scent behaves and that it is a chemical substance.

Martha—Bird hunters often describe scent as behaving like smoke, rising and being carried by wind. I want to begin by reading a description of scent from Pollard's book because it is such a great analogy.

> "…consider a minute droplet of eucalyptus oil no bigger than a pin's head dropped on the surface of a bowl of warm water in a room with a dry warm atmosphere.
>
> The oil spreads out into a typical film on which the familiar rainbow colours of an oil film can be discerned. It spreads itself as thin and flat and wide as it can and in a very short time represents a film of oil only one or two molecules thick. From the surface of the

> water, molecules of water vapour are continuously pouring upward into the dry air. Molecules of oil of eucalyptus cling to these water vapour molecules, and in a relatively short time the oil will be completely evaporated from the water surface and widely perceptible as scent in all parts of the room.

Mike—Perfect, and it was written over 60 years ago.

Martha—But what is scent exactly?

Mike—Scent is a chemical substance. It is something that can be volatile (air borne), and is usually carried on moisture in the air.

Martha—Bird hunters know that moisture—humidity—is important for good scenting conditions but why is this true?

Tim— Odorants are simply molecules, suspended within some medium. They might be in water—we would say dissolved in water, or in the air. I suspect, but I don't know for sure, that humid air is simply less turbulent than dry air. Odorant molecules may simply travel faster in dry air because they are more likely to travel quickly in plumes (featherlike formations). Humidity may make odor plumes less dispersed but this is an intuitive guess.

Mike—One winter day a few years ago, Tim and I hunted when the wind chill was minus 20 degrees and the air temperature was 4 or 5 degrees. We saw four or five dogs have great difficulty finding birds that we knew were there. Later in the day we went through those spots and, sure enough, we found birds there. Our guess was that a combination of

extreme cold and very low humidity caused a rapid dispersal of the scent. Whatever scent was there was immediately gone.

Martha—What other factors besides humidity influence scent? Air temperature, ground temperature, wind, sunlight, rain?

Mike—All of them. They are all variables that interact with each other. Humidity is telling us how much water is in the air. Air and ground temperature, wind, sunlight, and rain all influence how rapidly the scent disperses into the air. This means that hunting conditions are constantly changing. Think about a typical field trial. In the first few braces we aren't seeing any bird contact. Suddenly, it is a different place. Sunlight heats up the air. The wind picks up. All these variables you have listed are interdependent on each other.

GAME BIRD SCENT

Bird hunters often use terms such as "body scent" and "foot scent" to describe different kinds of bird scents. Mike and Tim prefer the terms "air scent" and "ground scent" to distinguish scent that is in the air from scent that is on the ground. Generally, "air scent" comes from the bird's body, but it can also come from the bird's feet or droppings. Generally, "ground scent" comes from any part of the bird including feathers, feet, or droppings that comes in contact with the ground or vegetation.

Mike and Tim believe that factors influencing scent—humidity, temperature, wind, sunlight, rain—are important to consider when describing

different kinds of scent because they affect the volatility of scent and how widely and rapidly it is dispersed. For instance, in most conditions foot scent is ground scent. Foot scent remains on the ground because it is protected from the wind by vegetation. But, in some conditions foot scent becomes air borne, so now it is air scent. How rapidly ground scent becomes air scent depends on volatility. Using terms based on parts of the bird to describe different kinds of scent can be faulty since scent is constantly changing.

Martha—Pollard describes four different groups of scent that animals have.

> First, the true "scent" or pad secretion—true trail scent which is hunted by other animals…; secondly, the specific animal smell or body odour of the animal usually secreted by the anal or other specialized glands; thirdly, a special, seasonal sex scent secretion…; lastly, a "waste product" or urine scent which may carry all or any of the others at various stages of their manufacture.

If you were to guess, what would be the different types of scent that birds have?

Mike—We know many birds have preening glands that produce oil that they use for temperature regulation and other things like maintaining feathers. Other birds such as doves produce powder.

Tim—Secretions may have odors, so when a bird spreads the oil on its feathers, the feathers carry the scent. Every time a bird spreads its feathers, it releases scent through feather particles that come off the bird.

If the bird doesn't want to be detected and tightly folds its feathers, it releases very little scent.

Martha—Is this why it is harder for dogs to find birds early in the morning before they are moving around?

Tim—Yes. A bird that isn't moving, one that has been in one spot for a long time, has a better chance of going undetected than a bird that is moving. There are two reasons. First, if the bird isn't moving, it doesn't release much into the air. Second, if the bird isn't moving, it doesn't leave a trail on the ground.

Mike—Think about a handkerchief. If I take a handkerchief out of my pocket and shake it, a lot of particles are dispersed. This is just one example of what can happen when a bird fluffs its feathers. As the bird moves around, it also leaves a trail on the ground from its feathers, feet, and droppings.

Martha—So birds give off scent from their feathers, feet, and droppings. What about their breath? I know a lot of hunters believe a dog smells the bird's breath because a dog can be retrieving a dead bird and stop and point a live bird.

Mike—I hate to fly in the face of an imbedded myth, but a pheasant that weighs a couple of pounds has a lot of feathers on it, and these feathers give off a huge amount of scent whether the bird is alive or dead. Compare this to its tiny beak breathing in and out.

Tim—I agree. I think it has more to do with the static background. When the dog is walking with the bird in his mouth, the scent of the bird isn't changing. It just hangs there, and it is always the same. Anything else out there is a new stimulus, possibly a different type of scent, very possibly a stronger scent, which is in contrast to this static background.

Mike—How about this analogy. I'm walking and the light is dim. I've adjusted to what is out there, to this constant dimness. If a flashbulb goes off, I'll see it. It could be a good distance away, but I'll see it because it is in contrast to the background that is constant. If the dog has a bird in his mouth, the amount of scent isn't changing because the bird is dead.

Martha—Now, I'm going to change the subject because I want to ask about air washing. Can you explain what happens when a bird is air washed?

Mike—I've never liked this term. I don't know what air washing means. The scent is still there; it just isn't as strong.

Martha—Let me give you a specific example. I have two quail. I hold the first quail in my hand, shake it and throw it down in the grass in front of me. I release the second bird into the air, and it flies and lands at the far end of the field. I would call the second bird air washed.

Mike—O. K. Think about two glasses of tea. I pour one glass of tea on the ground right here in front of me. Next, I hold the other glass and throw the tea through the air. Now, there is a concentration of scent on the ground around the first bird—where the tea was poured, but the spot on

the ground where the second bird landed is not saturated with scent because the tea went through the air.

Tim—And, if you went out and found the second bird and threw it down on the ground, it would smell just as strong as the first bird. By throwing the bird down, you have created a concentration of scent in the air and on the ground.

BIRD DOGS

Bird hunters often use the terms “trailing” and “tracking” to describe how dogs work scent, but Mike and Tim feel these terms are too close by definition to be useful. Instead, they believe that the emphasis should be on the volatility of the scent and the manner in which the dogs hunt. Since low volatility (slow dispersion) scents remain on the ground, dogs work these scents with low heads. High volatility (rapid dispersion) scents are air borne, and dogs work these scents with high heads. During a hunt, a dog may move from air scent to ground scent and back to air scent. We often see this during a relocation. The dog locates game by air scent, establishing point with a high head. After a flushing attempt, the dog is relocated, and he drops his head to work ground scent. Once he pins the bird and is taken on, he continues to hunt by constantly adjusting to different scent cues and changing scent conditions.

Martha—We’ve talked generally about scent and more specifically about game bird scent, but what are the mechanics of scent for the dog?

Tim—Scent is only scent to a dog if the dog has the built-in receptors. This is why humans miss out on a lot of scents dogs smell because we don't have these receptors. When the dog inhales, these chemical substances are dissolved in the mucous surface of the nasal passages, thus coming in contact with the appropriate receptors.

Martha—What happens to the dog when the scenting conditions are constantly changing?

Tim—These variables can make a dog's job harder or easier.

Mike—Exactly. A dog will maximize olfaction. As scenting conditions change, a dog will adjust. Think about what happens as we start driving later in the afternoon as the sun is going down. If the sun is in our eyes, we change our driving style so that we can see better. And once the sun goes down, and it is twilight, we pay more attention to certain kinds of things to maximize our driving safety. In the same way, dogs are constantly trying to maximize their abilities to find birds.

Martha—Earlier, we talked about a dog that points a live bird with a dead bird in his mouth. This is an impressive feat.

Mike—Of course it is, but remember a dead bird is a shot bird, and it gives off a combination of scents including blood. Think about what can happen when a dog hunts dead. A bird is down, which the dog didn't mark, and he is going to find it. The hunter says, "Dead, hunt dead." Then, wham, the dog goes on point. This is a different bird than the one he has been hunting for. The dog knows that he is looking for a dead bird because he

has been trained to hunt dead. But the live bird gets his attention, and he points it. He does not try to run in and grab it. He points it because he knows the difference between a live bird and one that has been shot.

Martha—Is there anything else that you think we would be interested in learning about our dogs?

Mike—One last thing to think about is that scent has temporal capabilities. When animals use sound to hunt their prey, they either hear it or they don't hear it. Once the sound is over, they have lost forever the ability to use that particular cue to locate their prey. When animals use scent to locate their prey, they can get a lot of information while they are smelling it, a lot more information than if they just heard a sound.

Martha—Wow, I never thought about it this way.

Mike—Take a non-productive. Sometimes the dog is over-powered by scent from a feather pile on the ground. The dog goes on point. Now, it is a matter of training and experience for that dog to figure out that no bird is there. It is just a feather pile from a hawk kill. Temporal information is embedded in scent that is not in the other sense modalities. With scent, the dog smells the prey at the same time he is analyzing it— thinking about it, and perhaps deciding that it is old scent i.e. no bird.

Martha—But isn't this like sight?

Tim—That is an interesting analogy because, presumably, what both scent and sight may have in common is spatial information. We get spatial cues—3-d relationships about where structures, animals, whatever,

are in our surroundings. If I get really speculative and imagine what scent is for dogs, I see these hot spots all over the place. So, in addition to whatever they are getting from their visual sense, the environment is filled with these hot spots from different chemical stimuli, which they are receiving from their sense of smell.

Martha—What a great image. It is so easy for us to forget that our dogs are constantly being bombarded with all kinds of information from their noses as well as their eyes. Pollard addresses this topic in a wonderful paragraph about dogs' noses and maybe this quote is a good way to conclude our discussion.

> Dogs are colour-blind, seeing all colours as a monotone of different depths, but it is possible that scent to them is a perception of a range of differences as wide as those our optic nerves register. They see the world…in shades of light and shadow, but they know the world through their noses. We see the world in colour, but have almost no noses. I am not sure that for real interest, apart from aesthetics, the dogs have not got the best of it.

After the interview ended, the three of us stood on the porch mulling over the merits of our discussion on scent. We talked about the fact that we would become more proficient at interpreting our dogs' actions in the field if we could grasp what they were sensing in the environment. We agreed that the study of scent was a valuable tool for reading the minds of our bird dogs and bird dogs and their noses were truly remarkable.

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