

LONG RANGE SHOOTING

A Hunter's Viewpoint

By David A. Miller
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Consistency is the essence of good shooting. I could end this discussion here and would have said all that needs to be said. Or, I could ramble on ad infinitum and explain what I mean in terms others might understand. Like most things in life, the end is important, but it is the journey there that defines each of us in our own individual way.

I hunt with rifles. This means that, by definition, I am both a hunter and a rifleman. It is critical to understand that these two personae are inseparable if I am to be successful. Regardless how good a

the kill. Every single thing I have done from the time I first decided to go hunting as a child is relevant to each and every animal I will take in the future.

What does this have to do with long range shooting? Everything. Why? Because everything is relative. I define a hunting shot to be anything from the muzzle of my barrel to a point at or perhaps somewhat beyond 500 yards. For me, a 500-yard shot is a long-range shot. It also happens to be a shot that I am confident I can make — and repeat. I would not attempt a 500-yard shot at game if I did not feel confident that I could make a 600-yard shot.

Reality is a state of mind. I continually try to expand my knowledge, understanding and ability in an effort to expand the possibilities. Total excellence is sought but never achieved. I say all of this in an effort to set the stage for what I hope will be an enlightening discussion about long-range hunting shots, how I make them and what I do to prepare for the moment of truth. To help the process along, I have developed a number of Miller Dicta:

■ I have never taken a step backward to make the shot longer.

If I could touch a record animal with the muzzle of my rifle to guarantee a perfect hit, I would do it. Unfortunately, the animals don't usually see it that way. However, I do everything I can to get as close to the animal as is possible under the circumstances at hand. When it comes to true trophy-class animals, that distance often (if not most of the time) is a long way. This means that if I am to be successful, I have to be able to hit that animal under those circumstances at that distance. Lesser animals can be approached more closely more often. However, record book animals rarely allow themselves to be a short range target.

■ If I don't believe I can hit the animal twice, I don't shoot. It's better to wait for a better opportunity or another day. I cannot depend upon luck. There is too much time, effort and expense involved in any serious hunt for me to be so flippant. Until the moment of the first shot at an animal, there are many more options than there are the instant of the shot and all time thereafter. When the first shot is taken, things happen quickly. I must be prepared to react quickly. Before I take the first shot at an animal, I have already decided what my



The Miller Marksman rifle is built for long range shooting. This is a Miller Marksman rifle chambered to the .300 Weatherby Magnum cartridge. It has a 26-inch fluted barrel and is fitted with Miller's proprietary scope mounting system that holds a 6.5-20x Leupold scope.

hunter I am, I cannot be a truly good hunter if I also am not a good rifleman. Similarly, regardless how good a rifleman I am, I cannot be a good hunter unless I also know how to hunt successfully. Briefly, one is defined in terms of the other.

A successful hunt is not complete until the animal is on the ground and claimed by the hunter. That's just the way it works. Every single thing I do between now and the time I take another animal has some bearing on what animal it will be and the circumstances of

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second shot will be. When the first shot is taken, I have nothing better in the world to do than to assure that the animal is bagged. Stuff can happen, and even though I expect to hit an animal with the first shot, I do not consider the animal to be on the ground until it is on the ground. If the animal remains standing, I shoot again. There is but one degree of dead. The term "overkill" is an oxymoron. I shoot so that if I miss, I miss by shooting over the animal, not under it. Animals will flee much more quickly when a bullet hits below or in front of them than they will when it goes over them. If I miss the first shot, then the second shot is placed slightly lower. For every contingency, I have a plan and I follow the plan — consistently.

■ I have a pair of rifles chambered for the .300 Weatherby Magnum cartridge. Both rifles, made in our shop, have

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6.5-20x Leupold scopes on them, attached by mounts we make in our shop. The scopes have reticle grids with stadia wires that help me determine distance and that help me hold the rifle on target after I have determined the distance, as well as the wind. This

means I can use the stadia wires for the right hold when it comes to elevation, and when it comes to windage. Although these two rifles are as identical as I can make them, they are different. I shoot both rifles just before a hunt. The one I feel is shooting the tighter groups at that moment is the first choice for the hunt. In a barrel's life, there are times when it is more accurate than at other times in its life.

■ Effective field position shooting is much different than some might imagine. First, it is crucial that I establish the maximum field of fire on the animal before I ever take a shot. By this, I mean that I try to figure out which direction the buck is likely to go if it moves at all following the initial shot. With that in mind, I look over the situation, assuring that I have as much of a field of fire as is possible, once the shooting begins. I do not want a tree or rock near me to obscure my view from a whole segment of arc on one side or the other of the buck, if I can help it. I always use some sort of rest for long shots. Much of the time, I use bipods. However, it is important to note here that resting the front of the rifle is only part of the answer. It is at least as important to rest the butt of the rifle, as well. The rifle must be solid for the shot. Often, I find myself using a shirt or a hat over a rock or my backpack as a rest — front and/or rear of the rifle. Over the years, Curt Crum from our shop and I have worked on the details of this kind of shooting. There is no easy nor simple way to succeed. I find that I have to do every single thing every single time to make it work.

■ For years, I have used some sort of wind gauge or meter to determine the velocity of the wind. Such knowledge is crucial for long-range shooting. But the gauge where I am at the time only tells me what the wind is doing at the rifle. It is also important to determine what the wind is doing at the animal, as well as the entire distance between me and the animal. This is also another reason why I use high-powered binoculars on a tripod. When I look at the animal,

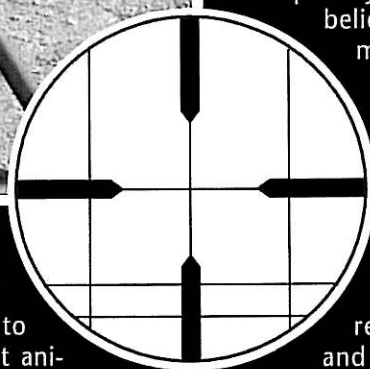
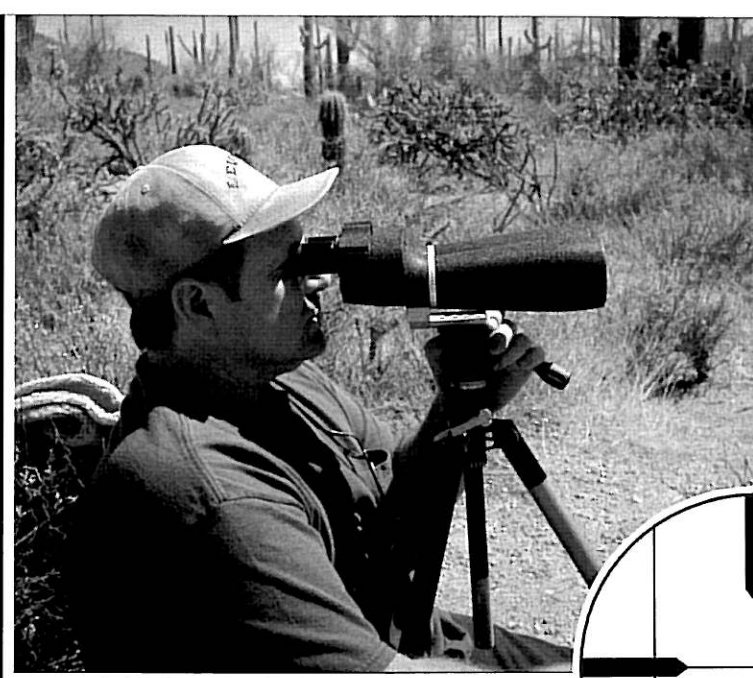
I also watch the grass and the leaves of plants near the animal to see if there is a wind there, about how strong the wind is and what direction it is coming from. I also study the area between me and the animal. I look for spider webs, pollen or insects and see which way they are moving or traveling in the air. This requires refocusing the binoculars to a mid-point to see what is going on there. I also use the powerful optics to determine whether there might be something in the way of the shot (like a branch). This, of course, is after I have used the optics to find the animal in the first place, and after I have judged the animal to be of trophy proportions.

■ I continually spend a lot of time learning to control my breathing and heart rate in field conditions to help enhance my shooting ability. I concentrate on these things all year long, every year.

■ I watch my sugar intake on a hunt or I will be shaky and nervous. Serious hunting is a form of athletics. The slightest jitters can make the difference between a hit or a miss at long range.

■ I believe that shooting offhand is some of the best shooting practice one can do. Show me a rifleman who can shoot on his hind legs and more than likely, he can shoot well from the other positions. This I believe strongly, even though I use a rest whenever possible. The more solidly the rifle can be rested, the higher percentage the hit. But if I can make long shots offhand, then those same shots are more comfortable from a rest. I use all the help I can get, but first I make certain I can perform up to my expectations without such aid.

■ The hunter is the only one who has total control over whether and/or when the shot will be taken. If I am hunting alone, then the decision about the trophy quality of the animal and whether the shot is doable is solely up to me. If someone is with me and serving as spotter, then I have to take several things into account. For example, just what qualifications does this other per-



■ I consider reloading to be essential for long-range hunting. This is because I need to squeeze the last measure of performance and accuracy from every shot. I do not believe in leaving any velocity on the reloading bench. And I go to extremes to assure that the ammunition I shoot is the best it can be. Some observers may feel that I become obsessed on such things, and perhaps they are right. I firmly believe that there are many variables on a hunt over which I have no control—like the weather. So, for those matters that I do control, I try to remove any inconsistencies. My reloading practices and techniques begin where most bench-rest shooters operate, and then I get obtuse. I try to keep any and all compromises as infrequent and minimal as is humanly possible.

So far, I have limited the discussion to taking and making long range shots on game. Lest anyone get the wrong impression, I also consider myself to be an absolutely serious hunter. I have assumed that it is understood that I have studied the species of animals that I hunt for years and that I do everything I can to understand not just what these animals can or are likely to do, but what they cannot do or are unlikely to do.

As much as I must understand the abilities and limitations of myself and my equipment, I must know the abilities and limitations of the game I hunt. I respect these animals beyond description. If I did not, then they would not hold for me the dignity to require the best I have to offer.

It is for these reasons that I will not take a shot that I consider to be irresponsible. As I mentioned above, if I do not feel that I can hit the animal twice in rapid succession, then I do not take the shot. I do not like to wound animals and I do not like to track wounded game all over the mountains or through the woods.

Miller looks through one of his special optical rigs – twin mounted 22x spotting scopes that are used like tripod-mounted binoculars.

Inset: Miller's scopes have reticle grids with added stadia wires to help him determine distance. The added stadia wires also help him hold the rifle on target.

son have to be an effective spotter? It is possible to be talked into making a bad shot, or of passing up a good shot. The ultimate decision is that of the hunter who is holding the rifle. I must never lose track of this fact.

■ There is a lot of difference between making a long shot on a trophy animal, or making a long shot on a mediocre animal. Shooting at a once-in-a-lifetime trophy raises the nerve factor exponentially. If I am really, truly prepared for the shot, then I should be willing to stake the reputation of my business and me upon that shot. Anything less, and the confidence factor begins to erode. Without confidence, long shots should not be taken.

■ Animals are different today than they were years ago. What I mean is that the same species can, and often does, act differently now than it did decades ago. This is because of many things, including the increasing presence of humans and, in some instances, increased hunting pressure. What this means is that some animals that were approachable at short or reasonable distances in the past will not allow a hunter to get as close now. This also is happening in Africa, as well as North America. Again, Curt Crum and I have made studies of these animals, keeping current with what the animals are actually doing now. I have to hunt animals that are alive now,

not ghosts from the past. I must be able to know how that animal is going to react if I am to be able to bag it. And often now, this means having to make a long shot. There is no other way to get some of these truly trophy-grade animals. I suspect that this situation will continue to evolve so long as animals are hunted. Hunters need to change their tactics when the animals change their behavior. It is that simple. This is especially true in modern times when the rifle hunting seasons are set during non-rut times when it is much more difficult to approach any significant trophy animal.

■ A hunter should always acquire the best equipment possible, even if it means suffering some economic pain. The best there is in the world cannot be too good. This applies to every single piece of equipment. I need boots to get to the area to hunt. I need the best optics available to find and to judge the animal. I need the best scope to be able to make the shot. I need the best rifle to deliver the shot, and I need the best ammunition to supply the shot. Like any chain, the ensemble is no better than its weakest link. If you are seeking a world-class trophy, you need world-class gear. In fact, you need redundant gear, but that is the subject of another discussion.

Certainly if I hit an animal, I will track it until I find it. But inflicting pain is not part of my plan.

With these parameters in focus, it is relatively easy for me to define precisely what I feel is a long-range shot on game. It is a shot between 400 and 600 yards. Beyond 600 yards, there are too many factors that can spell disaster. Granted, there is the distance itself and the wind, if any. But there also is the energy and performance of the bullet itself. Beyond 600 yards, for example, a bullet from a .30 caliber hunting rifle often will not go all the way through (side to side) an animal as small as a Coues' deer. At 500 yards, these same bullets almost always exit the far side. This means a complete wound channel all the way through the animal.

For me, there are two cartridges that perform satisfactorily in what some people have termed the DMZ (David Miller Zone) which is between 400 and 600 yards. These are the .300 Winchester Magnum and the .300 Weatherby Magnum. Larger bullets at tactically relevant velocities mean abusive recoil that inhibits delivered accuracy. You cannot hit something repeatedly if the rifle is hammering you silly. Although muzzle brakes could work for those larger caliber rifles, there are added problems that inhibit success when hunting the Coues' deer, as well as some of the other species. Smaller bullets at achievable velocities are marginal, at best.

I am not saying long shots cannot be made with smaller or larger bore combinations. They can. However, it has been my experience that the .300 Magnums deliver adequate performance while possessing minimal negatives. In other words, for me, I am using the biggest, fastest combination that doesn't impede my ability to handle it.

The reason the DMZ starts at 400 yards is because it is there where the many real tactical problems begin. It is there that estimation of distance starts to be critical. It is there that the effects of wind on high performance bul-



lets begin to make enough difference to turn a shot from a potential hit to a miss, or a really bad hit. It is at 400 yards that conventional, mechanical methods of estimating distance begin to become dicey. And, at 400 yards, even the time of flight of the bullet can begin to matter should the animal decide to move just when the shot is fired.

From the end of the rifle to 300 yards, most of these factors do not play a decisive role. For example, at 300 yards, a 5 mph crosswind does not have enough effect on a bullet out of one of the .300 Magnums (I use boattail bullets) to turn a hit into a miss. And, even a little hold off to account for the wind is not likely to do anything but improve the placement.

Assuming the rifle is zeroed properly, there is not enough bullet drop or rise at 300 yards or less to turn a hit into a miss. And, most modern centerfire hunting cartridges deliver killing performance at 300 yards. So, 300 yards cannot be considered long range, even though 300 yards may well be beyond the competency level of some hunters. Again, it is critical that hunters do not take shots beyond their level of competence — whatever that level happens to be.

For example, if a hunter can hit every time at 50 yards, but not at 100 yards, then it would be proper for that hunter to limit shots at game to no farther than 50 yards. Yes, this is an extreme example, but it is suggested to make a point. A serious hunter must know himself and his equipment well enough to know how far is far. And, he must know not to go beyond far. If it is 100 yards (which is not uncommon), that

Miller shows a 108-2/8 point Coues' whitetail buck he took in Sonora, Mexico, at a distance of 550 yards.

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is fine. Just don't take longer shots. In fact, I would suggest that if a hunter's ability ends at

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the 100-yard line, that the hunter probably should not consider a shot on game at much more than 75 yards. If the hunter is confident at 100, then he is tactically confident at 75. He will be more successful doing this than trying unreasonably long shots.

There is a growing group of effective long-range hunters around us. They include Kirk

My shooting buddies and I take life-size silhouettes of the game animals I am going to hunt and set them up at random distances in the desert mountains near my home. Then we shoot at them — seriously.

Kelso, Patrick Newman and David May, who are continually expanding their knowledge of long-range hunting.

Although I am considered to be a long-range hunter, I do not propose that all hunters should try to be long rangers. It takes years of practice — serious, steady practice. Those who are unable or unwilling to put in the effort should not play the game.

So what about the distance from 300 to 400 yards? This constitutes what might be considered a gray area for many hunters. If everything is right and if the hunter is confident that he can make the 400-yard shot, fine. Usually if a hunter is a rock-solid 300-yard shooter, then under favorable conditions, and following the proper amount of practice, the 400-yard shot is not unreasonable.

However, if there are negatives like blustery winds, consider 300 yards to be far.

For me, the 400-yard line is significant for another reason. Trophy-grade animals seem to project a comfort zone that goes out roughly 400 yards. For example, at 600 yards, you can walk around, even talk and not spook a big buck. At 500 yards, you are usually still okay, although you need to be cautious at that distance. But at 400 yards, you are beginning to get into dangerous territory. At that distance, he will be paying very close attention and is more likely to disappear or do something counterproductive to success for the hunter.

So, what I find myself encountering in the field is that the lethal limits of my ammunition are on the near side of the 600-yard line. The comfort zone of the trophy bucks is 400 yards. If I am to be successful repeatedly, I must be able to make shots that range from 400 to 600 yards, keeping in mind that within those parameters, I try to get as close as I can and still have a good, solid shot presentation.

The law of averages is a law because it is fact. What this means is that within these parameters, most of the shot presentations will be at more or less 500 yards. For me to be successful repeatedly, I must be able to hit the kill zone on these animals at that distance. It really is that simple. It is not easy, but it is simple.

What this means is that I must be able to realize a level of accuracy every single time that delivers to the target minute-of-angle performance. This does not mean that I can start with a rifle that, from the bench, will shoot a

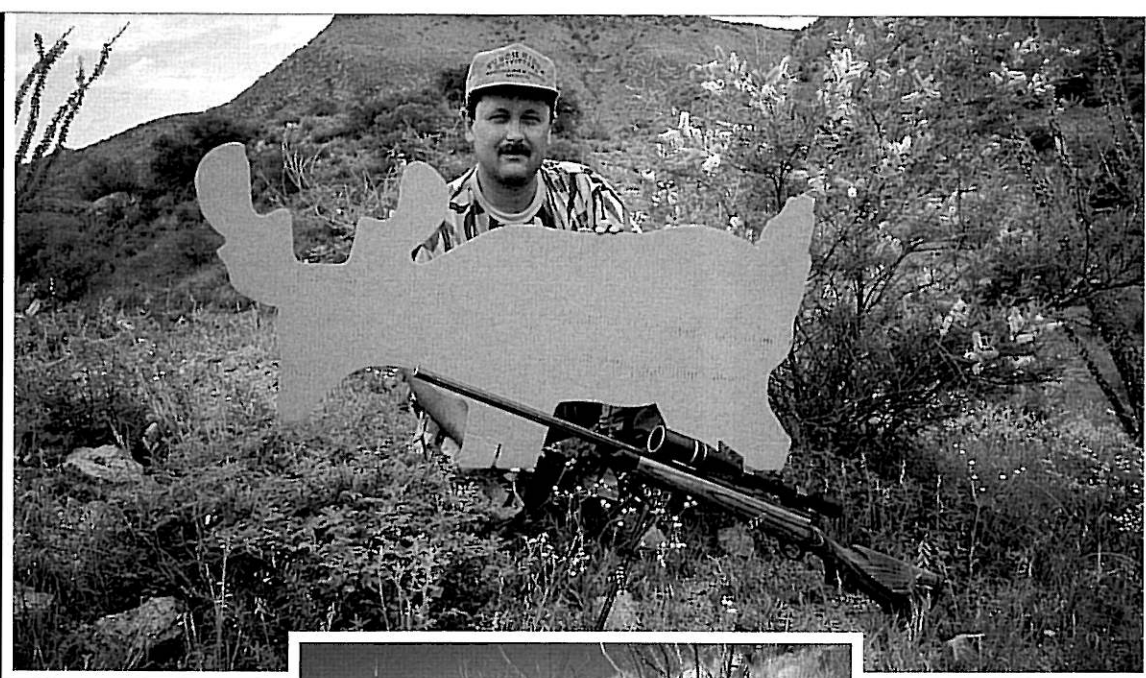
one-inch group at 100 yards. I have never computed the matter, but I would suspect that the rifle needs to be able to shoot groups of one-quarter to one-third inch at 100 yards if it is going to have a chance of delivering true minute-of-angle performance at 500 yards. I rarely shoot for group at 100 yards. I consider 200 yards to be minimal for determining things as basic as group size.

Factors such as wind, range estimation and deviation from round to round of ammunition all contribute to a degradation of delivered performance at long range. This is why there is no substitute for long-range shooting when it comes to long-range shooting. You simply have to take a lot of long shots during practice sessions in order to be able to make the long shots when it counts. There are no shortcuts that I have found.

It takes time, effort and money to assemble a credible long-range hunting rig. But that is just the beginning. Once the rig has been assembled, it is time to practice, practice, practice. For years, I shot several thousand rounds a year in serious practice at ranges from close to far. Now, I shoot at least 1,000 rounds of serious practice each year, just to keep on top of my game and to maintain peak performance.

I shoot a lot at prairie dogs from the offhand position, including running prairie dogs. I shoot running jacks and running coyotes. My shooting buddies and I take life-size silhouettes of the game animals I am going to hunt and set them up at random distances in the desert mountains near my home. Then we shoot at them — seriously. We attempt to determine the distance, dope the wind and then take the shot, just as though it was for real on a hunt.

It is disappointing when you walk up to the silhouette and see a hole in a leg, or no hole at all. It feels good when the hole is where it is supposed to be. We do this time and time again, all year long. The only time I quit practicing for a hunt is when the season begins. I return to practice as soon as the hunt is over.



Kirk Kelso shows one of the silhouette targets used to practice shooting at random distances during the off-season. This kind of practice pays off when the actual hunt is underway.

Inset: David Miller, right, and David May show a Coues' whitetail buck that measures 92 points. This buck was taken in Arizona at a distance of 550 yards.



In a way, I hunt 365 days a year. If I am not in the field actually hunting, I am thinking about hunting, talking about hunting, getting ready to go hunting, practicing for hunting. Is it an obsession? Not really. It is what I am and who I am. To borrow from one of the famous philosophers: I hunt. Therefore, I am.

Although I have always been able to shoot to the edge of the performance levels of my equipment, it wasn't until the past few years that I have been able to push the envelope to or a little beyond the 500-yard line for repeatable shots on game.

First, it takes years to get to the long range skill plateau. But even then, there were "walls" to the shots much beyond 400 yards. Two of the most important advances in recent times have been cryogenics for treatment of rifle barrels and the coating of bullets with molybdenum disulfide (moly).

The deep freezing of barrels has made it possible to create accurate rifles more regularly. This is bedrock in its importance.

Moly coating of bullets is crucial, not because it results in higher velocities as some suggest. I have not noticed an advantage here. Rather, I have found that there are two advantages to using moly-coated bullets for hunting. First, they help extend barrel life, and that is sig-

nificant in and of itself. Second, the bullets slide through the air more slickly, which means they drop less at long range. Less bullet drop is important at long range — especially when the exact range is not known.

Oh, I do a lot of other things to stack the deck in my favor, and much of them are at the loading bench. For example, I use an ICC (Internal Concentricity Comparator) religiously on both bullets and cases. This allows me to scrap bullets or cases with internal flaws, and to categorize the remaining cases into groupings that will deliver more consistent loads. I have a routine with my cases that involves one fire-forming pop and then one loading for hunting. I never reload a case and take it hunting after it has shot a full-house load. Those cases are used for practice.

There are reasons for all of the minutia involved in my reloading practices — far too many to explain here. The point is that I make certain everything I do helps deliver better performance, better consistency.

Although I realize that the successful shot on game has to be made in the field, I also believe that it is possible to create a miss back home before the hunt ever begins. You can create a miss by not practicing. You can create a miss by having less than the best equipment. You can create a miss by using less than the best ammunition humanly possible to make for your specific rifle. You can create a miss by having the wrong attitude.

Consistency is the essence of good shooting. Any inconsistency in you or your equipment can open the door for inconsistent shooting. You have to live the shot. And yes, the shot you will make best is the one you take most often. If you don't shoot long range most often, you cannot make it best. It is that simple.

But first, answer one question: How far is far? For a bowhunter, might it be 75 yards? For a shotgunner at birds, maybe it is 60 yards? For a black powder traditionalist, perhaps it is 100 yards? For me, it is somewhere between 400 and 600 yards, depending on the circumstances.

I cannot tell anyone how far is far for an individual. I can, however, tell everyone how far is too far. Too far is when you can't make hits repeatedly and deliberately. Hunters should never take shots that are too far. The animals and the sport deserve better than that. ▲ ▲ ▲

ABOUT THE AUTHOR

David A. Miller has hunted in both North America and Africa for decades. He is the maker of fine quality hunting rifles. Living in Tucson, Arizona, is the pivotal reason that his major focus in recent years has been the elusive Coues' whitetail deer.

It has been in the pursuit of the Coues' deer that Miller has become known as one of the premier long range shooters on game in the world.