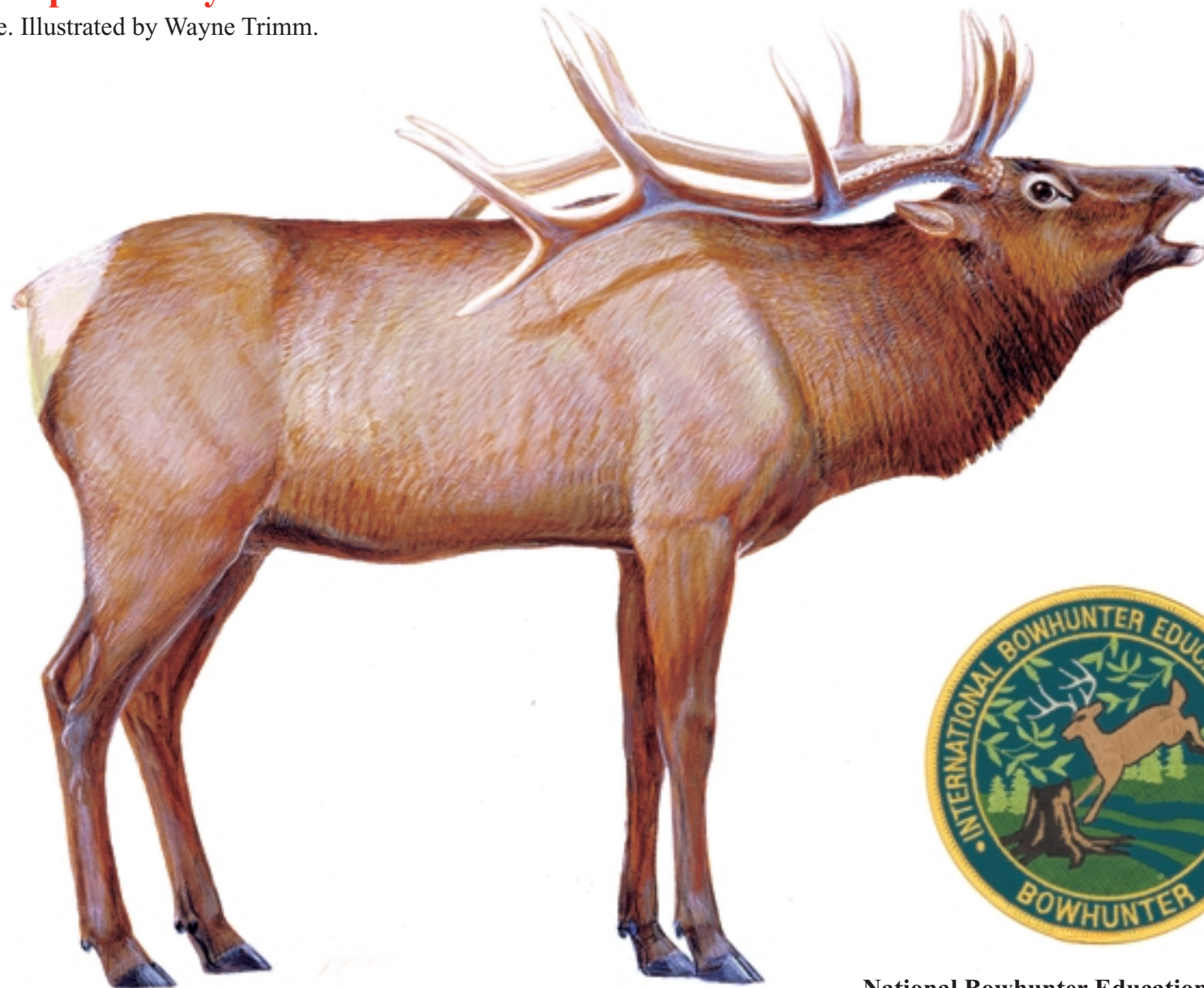


Advanced Elk Anatomy and Shot Placement Guide

IBEP Hunter Responsibility Series

Text by Janet L. George. Illustrated by Wayne Trimm.

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National Bowhunter Education Foundation
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Elk Shot Placement

Firearm hunters and bowhunters have a responsibility to make quick kills and recover all game. One complaint that members of the public who do not hunt have about hunters is “slow deaths, wounded and unrecovered animals.” Accurate and proper shot placement is the key to a quick kill and game recovery. Necessary ingredients of good shot placement are knowledge of how a hunting arm kills game, shooting only within one’s ability, and knowing the game animal’s internal anatomy. The future of hunting and each hunter’s self-respect depends on the ability to efficiently harvest game.



Shot placement is especially important to elk hunters because of the animal’s great size and weight. Elk are more than three times the size of deer. An average cow elk weighs 500 pounds, while bulls average about 650 and occasionally exceed 1,000 pounds. Besides being heavier and larger than deer, elk have thicker skin, heavier bones and proportionately larger stomachs - all of which affect penetration and performance of arrows and bullets.

How an Arrow Works

Arrows tipped with **razor sharp** broadheads are designed to cut. Arrows harvest game by cutting arteries and veins resulting in significant blood loss. In addition to severe bleeding, arrows shot through both lungs cause the lungs to collapse, resulting in rapid death by suffocation. Arrows can cut through softer bones like ribs. Arrows shot from even a heavy bow lack enough energy to penetrate heavy bones found in the shoulder, hips, head and neck. Thus, both razor sharp broadheads and proper shot placement are crucial to effective harvest and game recovery. Shots at big game animals are best at less than 40 yards, or less if your personal effective range is less.

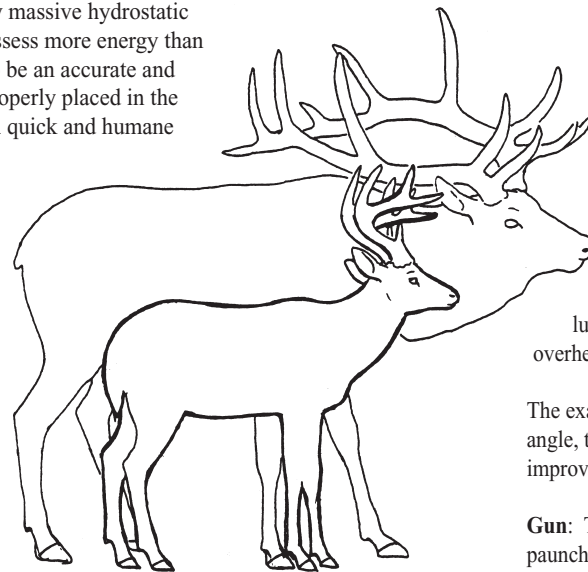


How a Bullet Works

Bullets fired from high-powered firearms harvest game by massive hydrostatic shock and tissue destruction. These high-speed bullets possess more energy than do arrows, allowing a “little” bullet to be an accurate and effective hunting tool. A projectile properly placed in the vital organs of an animal will result in quick and humane harvest of the animal.



Hunting elk with muzzleloading rifles is popular. The limitations of a muzzleloader present special shot placement considerations. The relatively heavy projectiles shot from a muzzleloader travel at slower speeds and can have less energy than those from most other high-power rifles. Also, loading from the muzzle means that more than one shot at an elk is unlikely. Thus, muzzleloader hunters should not take shots at elk that exceed 100 yards.



Internal Anatomy of Elk

Study the elk diagrams. A spot in the center of the lungs or slightly lower should be a hunter’s primary aiming spot. An arrow tipped with a razor-sharp broadhead or a bullet in both lungs will bring down the largest game. The advantage of this shot is that the lungs are relatively large, and the heart is located between them and lower in the chest cavity. The other vital organs surround the heart and lungs: the spine runs high along the back, the aorta (a major artery from the heart) is above the heart, and the liver and the spleen are located just behind the lungs and heart. Hunters using firearms generally have more aiming spot choices than bowhunters. A bullet striking either the heart, shoulder, spine or lungs is fatal to elk due to the massive hydrostatic shock and tissue destruction. Once again, the chest area offers the best lethal aiming spot for all hunting tools.

Where to Aim - Broadside

Bow: An elk standing broadside represents the best bowshot because it requires the least amount of penetration to reach the vital organs. The broadside shot is also the best angle for accomplishing a double-lung hit, resulting in the collapse of both lungs. Adjusting for any needed elevation correction in the aiming spot, find the best aiming spot on a broadside-standing elk by following up the back of the front leg 1/3 to 1/2 up the chest cavity. This aiming spot will place the arrow at the top of the heart and center of both lungs. If the front legs are spread apart, follow up the \wedge of the legs 1/3 to 1/2 up the chest. Both methods locate the aiming spot to put the arrow in the center of the vital organ area.

Remember, an arrow will penetrate through the ribs. Be careful to avoid the shoulder bone. Wait until the near front leg is forward and concentrate on a spot behind the shoulder. Always avoid head and neck shots. The brain and spine are small targets protected by heavy bone. The only artery of any size in the neck is the carotid, which is about the thickness of a pencil. Wait for the broadside chest shot!

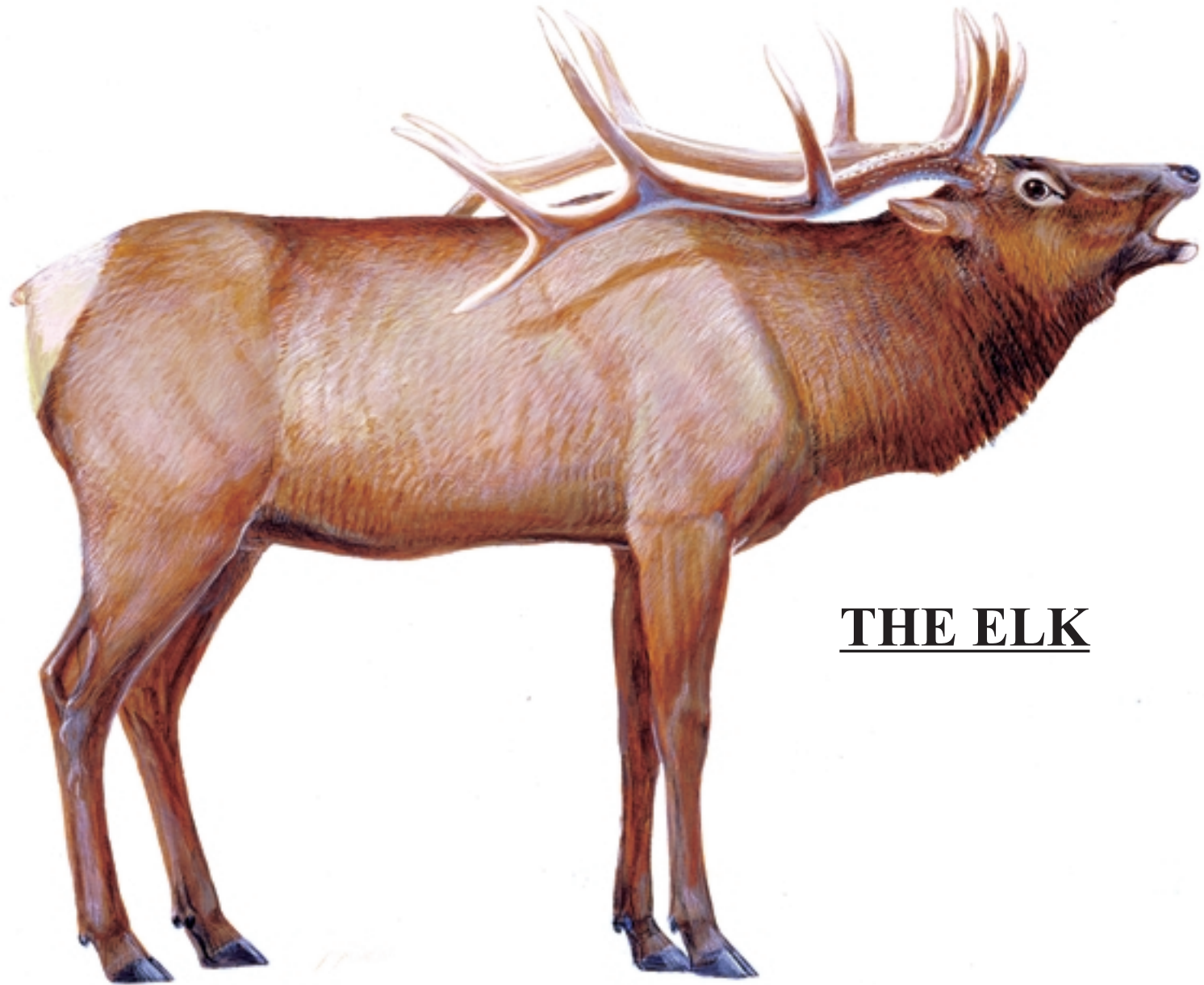
Gun: The broadside position offers several excellent shots for the firearm hunter. The best spot is behind the shoulder, in the vital organ area, as described above. A bullet of the correct design and weight fired from a high-powered firearm will enter the lungs and heart. A properly placed neck shot will likely drop an animal instantly. This shot should only be used if the shooter is proficient with the firearm. Head shots should be avoided. They result in more animals being wounded and not recovered.

Where to Aim - Quartering Away

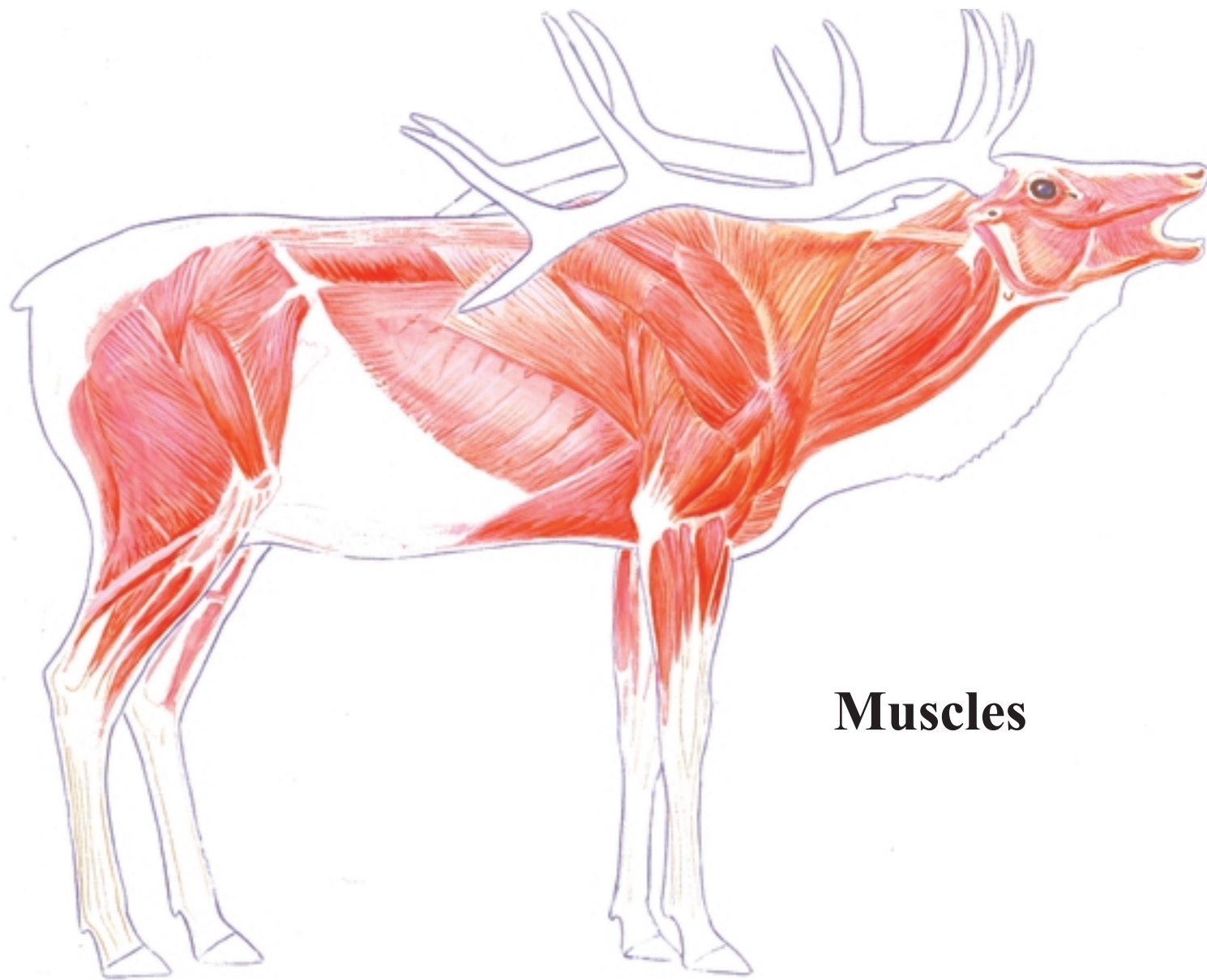
Bow: The quartering-away position is less desirable for larger animals such as elk or moose because they are broader in girth and have larger intestinal tracts, which could impair arrow penetration. This angle is excellent for other deer-sized animals. In a quartering-away position, the arrow must pass through some intestines and stomach before reaching the vital area. An elk’s stomach full of grass and browse can slow or actually stop the arrow from reaching the vital organs. When picking a spot on a quartering-away animal, think 3-Dimensionally. The best aiming spot on a quartering-away elk is in line with the far front leg to a point 1/3 to 1/2 up the body cavity. Imagine the arrow needing to pass through both lungs and the top of the heart while disrupting as little of the intestines as possible. Study the overhead view diagram on page 10.

The exact aiming spot will vary with the degree to which the animal is quartering-away. The greater the angle, the closer you are to making a wound in the paunch, hindquarter or rear-end. The smaller the angle improves the opportunity for having a broadside shot and penetrating both lungs.

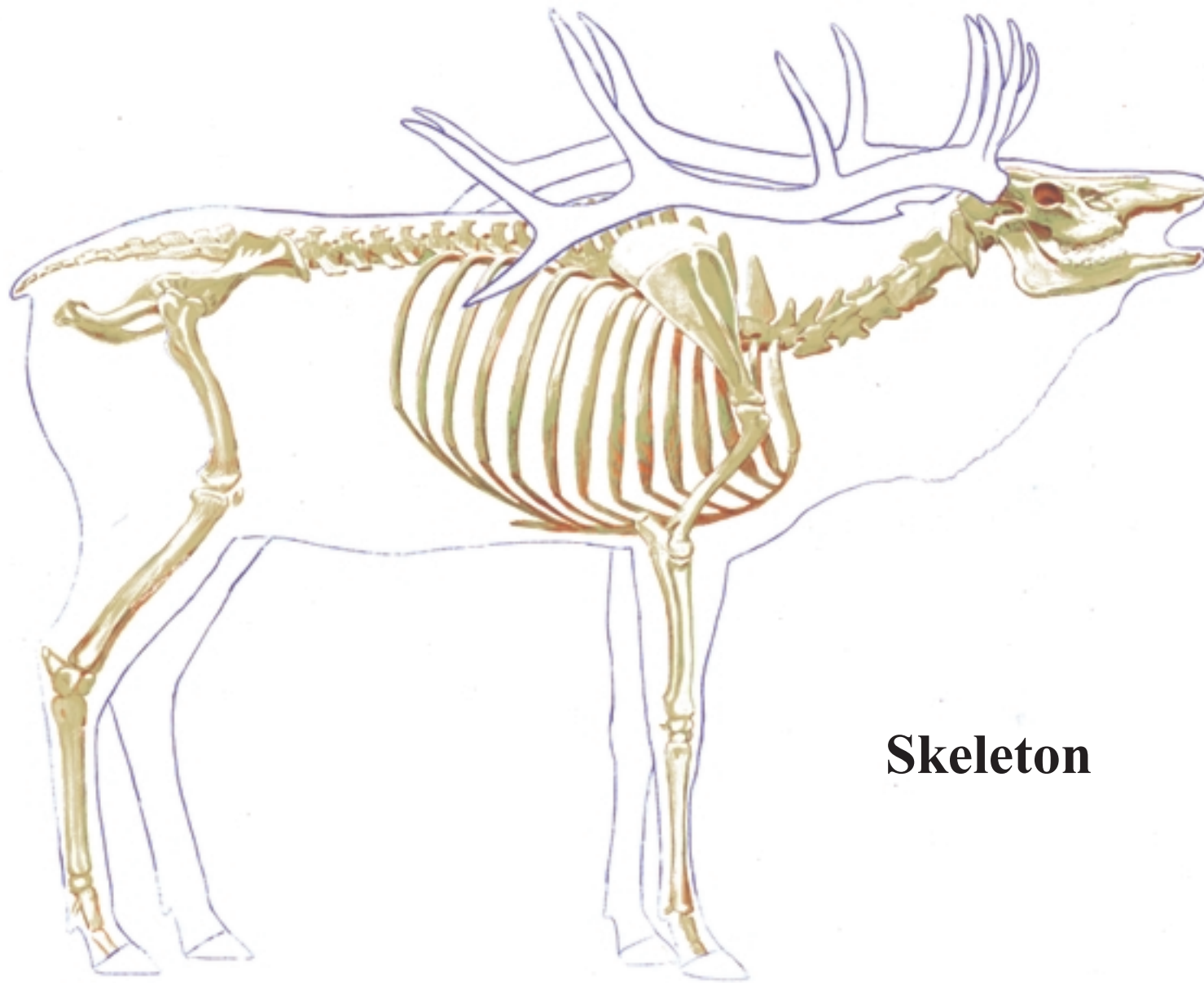
Gun: The quartering-away position offers several lethal shots for firearms. Be careful not to hit the paunch area or hindquarter. Behind the shoulder is the best aiming spot.



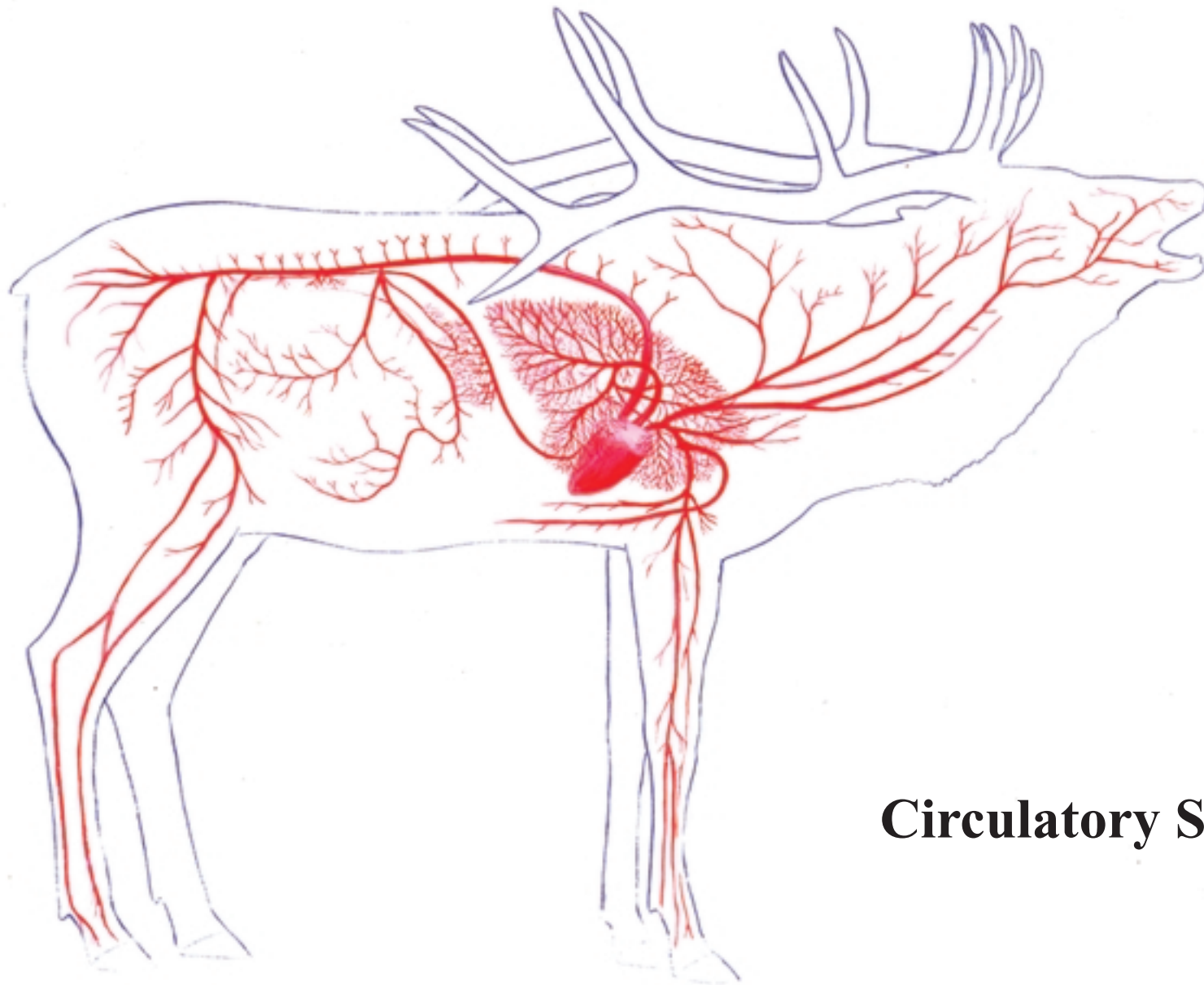
THE ELK



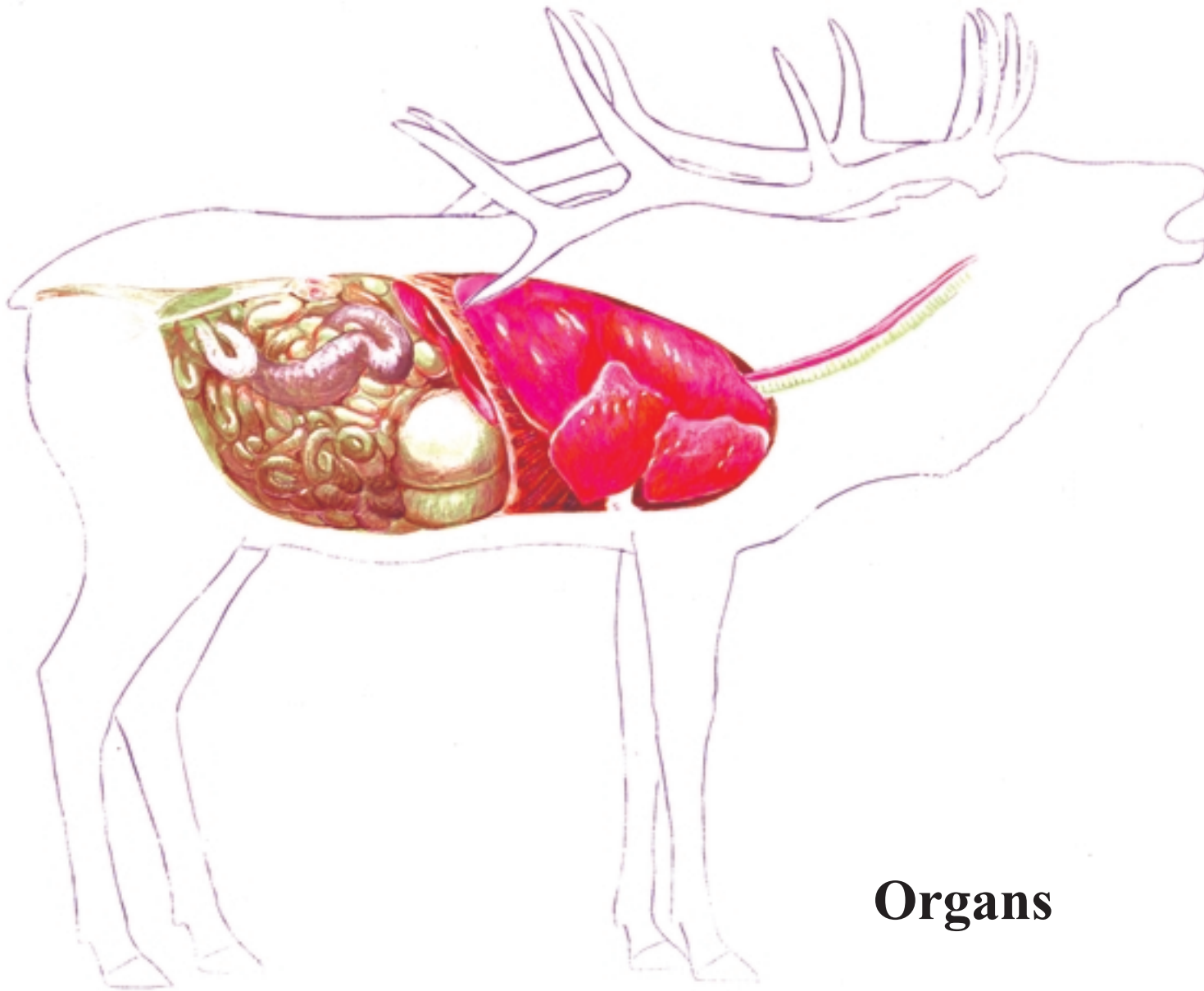
Muscles



Skeleton

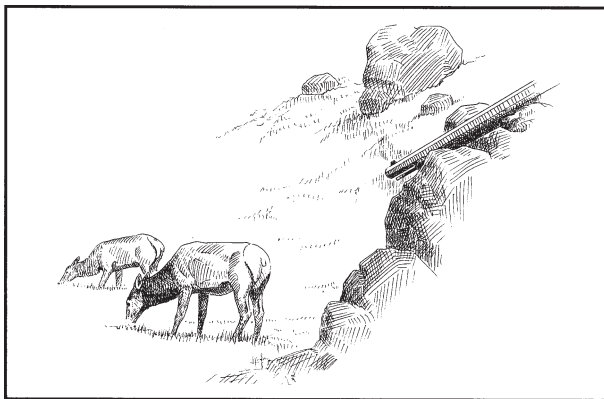


Circulatory System

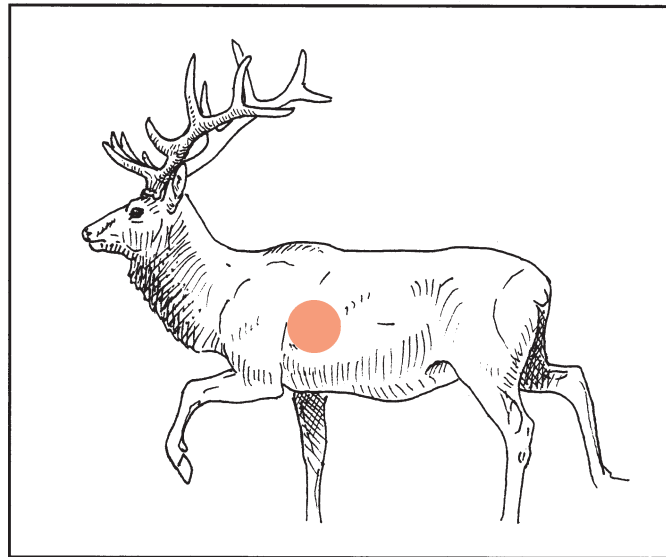


Organs

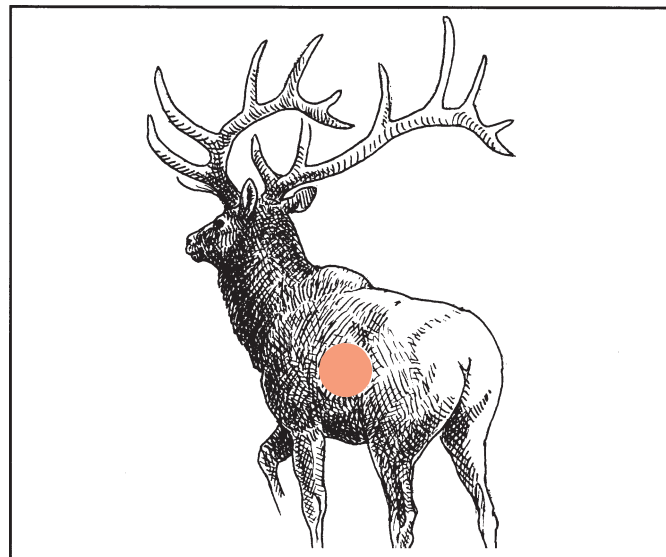
Making clean, certain kills should be the top priority. Consistent one-shot kills require marksmanship, knowledge of elk anatomy, and confidence when shooting the bow or rifle.



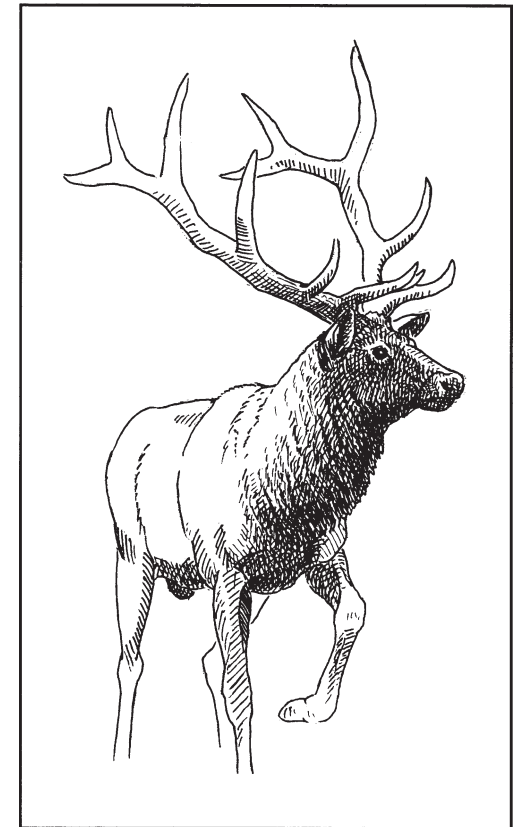
Making clean, certain kills should be the top priority.



The Broadside Shot
Bow or Gun



The Quartering-Away Shot
Bow or Gun



The Straight-On Shot
Gun Only

Where to Aim - Quartering Toward

Bow: This is one of the poorest shots for bowhunters and should not be taken. Picking a spot behind the shoulder will likely result in the arrow missing most of the vital organs and angling back into the stomach and intestines. Heavy shoulder bones shield the majority of the vital organs from penetration by an arrow. An error of only an inch or two will result in a non-fatal hit in the shoulder or paunch. Another disadvantage of this angle is the possibility that the animal will see the hunter drawing the bow. Wait for the broadside or quartering-away shot.



Gun: The quartering-toward angle is better for high-powered rifles, but is not recommended for muzzleloading rifles. Aim at the neck just below the chin or at ear level, or the front of the shoulder for an effective hit. A light bullet may deflect off the shoulder bones of an elk. Be certain to use a firearm and ammunition adequate for an elk and the type of shot selected.



Where to Aim - Head-on Shots

Bow: This is a very poor shot for a bowhunter. The vital area is the center of the chest between the shoulders, which is an extremely small target and well protected by bone. The animal must have its head up to expose this small target area, and it will almost surely see the archer draw a bow. An alert elk is capable of “jumping the string” of even the fastest bows and avoiding the arrow. Do not take this shot.

Gun: This is an acceptable shot with an adequate high-powered rifle. The neck just below the chin and the center of the chest are vital areas that the hunter can use as aiming spots. However, a muzzleloader hunter should pass on this shot angle.

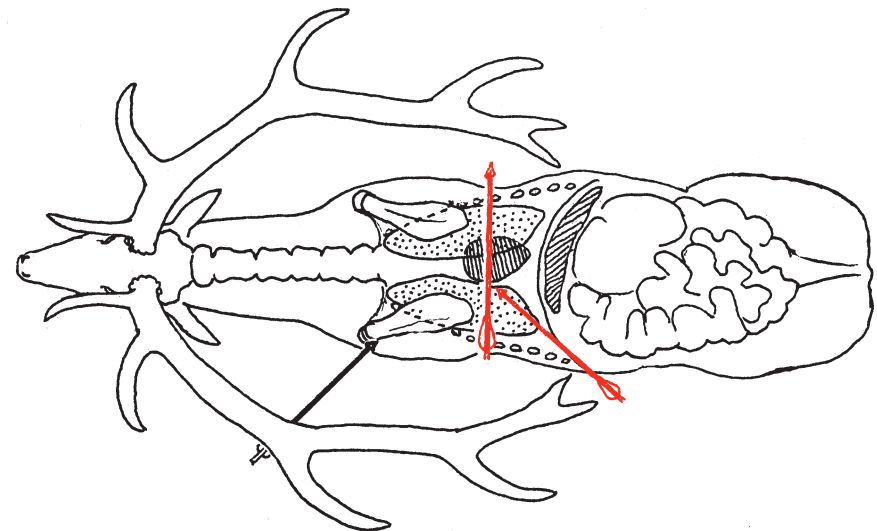
Where to Aim - Rear-end Shots

Bow: This is a shot all responsible bowhunters will pass up. The femoral artery is the only major target for a rear-end shot. This artery is about the size of a pencil and extremely well protected by heavy leg and hip bones. Also, the hindquarters have very heavy muscle tissue; together with the heavy bone structure and viscera, it makes this shot a questionable journey for an arrow to get to the vital organs. Wait for the broadside shot.

Gun: The rear-end shot is a poor shot with a firearm. A shot to the body at this angle may not bring an elk down quickly and could ruin large areas of meat. A neck shot is possible if the animal has its head up. Always wait for a better shot opportunity.

Where to Aim-Elevated Stands

More elk hunters are using elevated stands. Mountainous terrain can present similar shot angles. The change in the shot angle makes little difference to a hunter using firearms. The bowhunter is presented with a smaller portion of the vital area being exposed. The position of bones in relation to the vital organs changes as a hunter climbs higher. The back bone and shoulder blade shield more of the chest cavity as the angle gets steeper. This causes the vital and aiming areas to become narrower. To avoid the shoulder blade on a broadside animal when shooting from an elevated stand, aim farther behind the shoulder than you would from the ground. Complete penetration will result in a good blood trail. Avoid bones that could prevent the arrow from exiting low in the animal. Elevated stands also make it more difficult to make a double-lung hit. Consider the angle of the shot when deciding how high the stand should be (See the IBEP Tree Stand Guide). Eight to 12 feet is adequate. Bowhunters must practice from elevated stands before hunting. Shooting down at targets is very different than shooting horizontally at targets on the ground. ALWAYS wear a fall restraint system when practicing and hunting from elevated stands to make a good shot without the fear of falling. Safety is less expensive than hospital bills.





Remember!

Broadside elk offer the best shot for both firearm and bowhunters. Quartering-away shots offer another good shot for firearm hunters but less desirable in bowhunters. Bowhunters pursuing elk should wait for a broadside shot. This is particularly true with bowhunters using lighter-weight equipment.

Remember!

Centerfire rifle hunters can shoot animals quartering toward them or facing head-on. Bow and muzzleloader hunters should never attempt these shots. Rear-end shots should be passed up by all hunters.

Remember!

Correct shot placement not only depends on a hunter's knowledge of game anatomy, but also on the ability to place the shot in the vital area. Practice with the equipment including broadheads on a regular schedule. Practice under hunting conditions. Use full-sized animal targets where possible. Do not place any spot on the animal. Make yourself pick a spot in the vital area each time you shoot. Shoot in the wind, rain, uphill and downhill, with your hunting clothes on, and at unknown yardages. Firearms hunters should practice with and without a rest and from sitting, prone, kneeling and standing positions. Know your personal effective range for your hunting tool and your own abilities. Don't shoot at an animal unless you know you can make a perfect shot...every time!

Remember!

Above all, respect all wildlife, other hunters, people who do not hunt, the environment and yourself. If you have respect and value the hunting experience, it will be reflected in your every action, and upon every hunter.

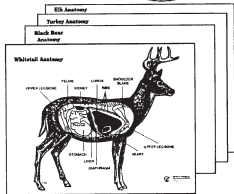
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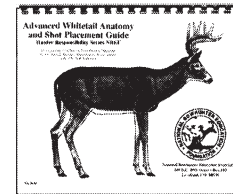
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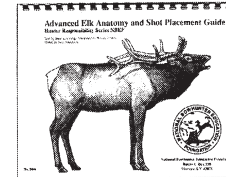
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