High-Tech Bullets and Slugs

NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

Non-Lead Ammunition for...

- Good Hunting
- Improved Conservation
- High-Quality Meat

Non-Lead Ammunition: A Better Choice

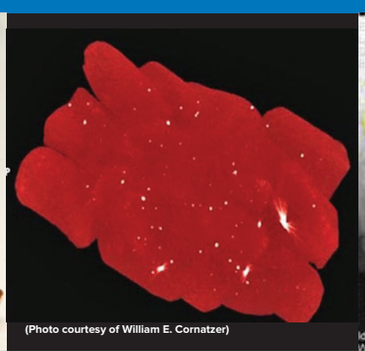
Soft, easily molded and heavy, lead has long been the most common type of ammunition. With early firearms such as muzzleloaders, lead bullets retained their shape, but modern, higher-velocity centerfire rifles often cause lead bullets (even those sheathed in copper) to fragment upon impact.

Fortunately, today's harder copper and other copper alloy bullets and slugs typically remain intact on impact, transferring more energy to the target by folding downward into "petals" that greatly expand the surface area. The result is a very effective, quick, humane kill and more edible, uncontaminated meat.

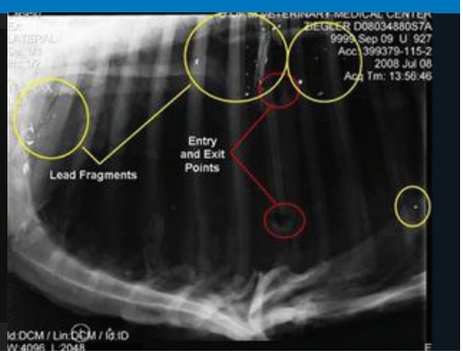
Fragmentation vs. Mushrooming

Comparison of two .270-caliber bullets shot into a modified rain barrel for collection to simulate performance on game. The copper jacket lead-core bullet (left) is heavily fragmented compared to the solid copper bullet (right) that retained its original shape upon impact.

Shotgun slugs made of copper fold into "petals," expanding the slug's surface area better than slugs made of lead.

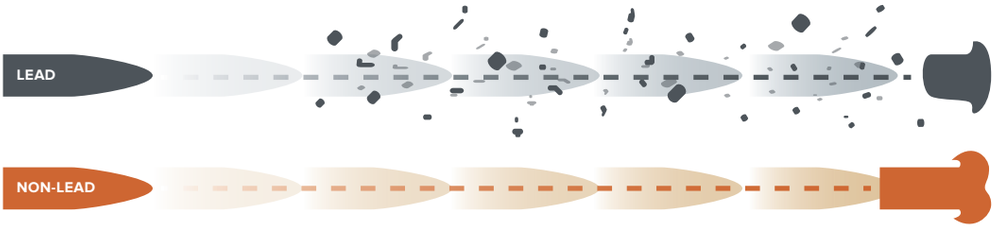


CT-scan showing lead fragments (appearing white) in 20 one-pound packages of ground venison.



Radiograph of a deer's chest illustrating fragmentation of a lead ballistic tip rifle bullet.

Lead's Risk for People and Wildlife



When lead and lead-core bullets fragment on impact, hundreds of tiny lead particles scatter throughout the tissue–up to 18 inches from the wound. Some of these fragments are too small to be seen, felt, tasted, or removed. These lead particles can ruin the quality and yield of game meat and pose a risk to people and scavenging animals.

Lead damages the organs, particularly the central nervous system, including the brain. People and wildlife who eat lead-tainted game meat are at risk. Scavenging wildlife may feed on lead-contaminated gut piles or unrecovered carcasses. Clear evidence of lead poisoning has been found in bald eagles in New York State. Non-lead ammunition helps eliminate these risks.

PROS AND CONS

Performance:

Copper ammunition is accurate. Technology is improving the ballistic qualities of solid copper and other monolithic bullets, and they often surpass those of lead bullets. To get the best results from non-lead ammunition, try different brands, as every firearm handles ammunition differently. It is important to note that copper bullets of the same grain weight as lead bullets are longer. This longer bullet will react differently in the gun barrel and to its rifling, yielding different ballistics. Reducing the grain weight of the copper bullet will give you similar ballistics to the higher grain weight of the lead bullet. The benefit to the shooter will be lighter recoil and thus more accurate shots. However, re-sighting one's firearm for copper bullets and slugs is necessary as this ammunition will shoot slightly differently than lead.

Cost:

Non-lead ammunition is similar in cost and quality to premium-grade lead ammunition. Although high-quality ammunition may seem expensive, it is one of the most important pieces of equipment purchased for a hunt and often represents only a small portion of the total cost of hunting.

Meat Quality:

Little or no fragmentation of non-lead bullets means that more high-quality meat can be taken home from a harvest, and this source of exposure to lead in people, wildlife and the environment is reduced.

Product Availability:

Non-lead ammunition for specific calibers may not be as easy to find as lead-based ammunition. With demand for such ammunition increasing however, more caliber options are becoming available. A wide range of non-lead bullets and cartridges is available from major manufacturers. Ask your local gun store to check on availability.