LEAD HUNTING AMMUNITION

Factors to consider when deciding if you will make the switch

JUSTIN SPRING
B&C PROFESSIONAL MEMBER
DIRECTOR OF BIG GAME RECORDS
Photos Courtesy of Rebecca Spring

The topic of non-lead hunting ammunition has become one of the most polarizing topics discussed in today's hunting community—and beyond for that matter. The "beyond" might be even more of a concern, but let's focus first on our own ranks. Much of this debate is rooted in concerns about the ramifications of a misguided and unnecessary ban on lead ammunition for hunting, though an equal portion is driven by a concern for individual birds that die from lead poisoning. This seems to be fueled by misinformation; perhaps more accurately described as misrepresentation of the best available research.

While both brands of non-lead ammunition shot well out of Rebecca's .308, the Remington performed the best with sub-MOA accuracy at 200 yards .

Recovered non-lead slugs. ABOVE: A Barnes muzzleloader bullet recovered from an elk. BELOW: Two .270 rounds recovered from a pronghorn taken at varying distances.

Raptor mortality is a fact of human presence on the landscape, and even if lead was removed completely from hunting, exposure would most likely continue. Wounded deer being dispatched after a vehicle collision, or predator management activities using lead bullets would most likely continue purely from a cost standpoint. I want to focus on what hunters should consider and can control when selecting what type of projectile we choose to shoot while hunting.

Lead becomes an issue when it fragments and is ingested by birds. Bullet fragmentation is caused by kinetic energy from a high-velocity impact, so we are mainly talking about centerfire rifle bullets. Secondly, the issue is not from target shooting. Folks are rightfully concerned that the banning of all lead ammunition would create a cost barrier to recruitment for target shooting and ultimately hunting. This is a very important part of this discussion in that plinking with a .22 or even going to the local shooting range to shoot some .223 rounds is not the source of lead that is causing these poisonings, and therefore, banning is not the answer.

It is important to clarify we are not concerned with a whole bullet somewhere on the landscape. A bullet on the landscape, barring highly acidic soil, is very stable. I reached out to Mike McTee of MPG Ranch who did his chemistry Master's Degree research on their shooting range. Mike recently told me: "At first, I figured lead would be the primary contaminant, but it wasn't. The lead shot was so dispersed, I had trouble finding areas that were highly contaminated. In my opinion, the trap and skeet targets caused a bigger problem. At rifle ranges, bullets get shot into berms where the lead is localized. If the soil pH is near neutral, the lead should be fairly immobile. Although, leaching is always an issue that should be considered. The good news is that the lead can be harvested, and remediation techniques exist to mitigate the problem."

HUMAN EXPOSURE

There are certain aspects surrounding the question of lead and its effect on some species, humans included, that either haven't been fully researched or there is still a lot of uncertainty in the literature. While acknowledging that research is ongoing, there are certain things that hunters should consider as factual when selecting bullet composition for hunting ammunition.

The first discussion many hunters can recall regarding lead came when lead shot was banned for waterfowl hunting in 1991. Bullets weren't included in the ban because bullets and bullet fragments were not recognized as a widespread concern at the time. The U.S. Fish and Wildlife Service (USFWS) estimated the number of ducks consuming the lead shot and dying, along with the number of bald and golden eagles consuming ducks containing lead shot, made a strong-enough case to trigger regulatory action.

It was the direct effect on the birds and their scavengers and not consumption of lead by hunters that resulted in the ban.

With improved techniques and continued research on lead exposure, we are finding more lead present in the meat of harvested animals than we previously thought, though not all of it is radiographically detectable. Much of the debate over lead bullets seems to center around its effects on humans, but there is still a lot of research to be done and a lot of uncertainty even among

Fair Chase **magazine has been covering the topic of lead ammunition for many years. Read more about the impact of lead poisoning on condors in the Winter 2009 issue, as well as the potential hazards to humans in the Fall 2008 issue. These are available online in the Associates community. You can also read the Club's position statement on lead ammunition on our website or the Fall 2019 issue of** ***Fair Chase*****.**

"experts." Regarding the human health hazard of consuming lead pellets and bullets, research confirms hunters and shooters have a slightly elevated level of lead in their bodies, though these elevated levels rarely cause major concerns. We know lead is toxic to humans and other animals at certain levels, but we have research that supports a threshold that is considered safe for adults. Research on elevated lead levels in the blood of hunters consuming wild game does not exceed this threshold, yet the Centers for Disease Control and Prevention recommend that pregnant women and children avoid all lead exposure, including the consumption of meat harvested with lead-based ammunition. Research thus far indicates that lead from harvested meat is not going to be a health hazard for adults consuming carefully processed deer meat occasionally.

From a human health standpoint there is little support for a ban on lead ammunition, however, there is a robust debate about how hunters are seen by the 95 percent of the U.S. population that are not hunters.

WILDLIFE EXPOSURE

We know that fragments of lead bullets are left in gut piles and scraps and are then inadvertently eaten by scavenging wildlife. This is not a concern for mammals because it passes through them rapidly, but because birds have a different type of digestive tract, they absorb much more of the lead they consume. Work on grizzly bears has shown elevated lead blood levels, but no adverse effects have been detected. Research leaves no doubt, however, that lead fragments consumed by raptors can be lethal.

The California condor has been front and center in this conversation because of the condor's endangered status and the fact they exist in relatively low numbers. Every death is a significant drain on the population. In the California Condor Recovery Program, each bird is numbered and monitored extensively. They are trapped, and their blood levels are monitored throughout the year. Besides blood level monitoring, they also undergo isotope analysis to try to identify the source of the lead. Lead that is found in their blood is analyzed and the signature it returns is recycled lead. This means they are not picking it up from natural sources. Indeed, there are other forms of recycled lead that have been identified as a potential source (in one case a lead paint source was identified).

Although some are still skeptical that bullets are the source of lead in condors, it is compelling that condor blood lead levels spike during and following big-game hunting seasons in their range. Also, ammunition residues (intact bullets, fragments or lead shot) were found in 27 of 40 cases of lead-caused condor deaths in Arizona and Utah. Similar elevated blood levels have been documented in golden eagles, ravens and crows around hunting seasons, though crows don't seem to be affected by elevated lead levels like other species. The smoking gun for me was the golden eagle that was reported by Yellowstone officials in April of 2019 that died of acute lead poisoning which through analysis they found most likely consumed lead fragments in gut piles and carcasses left afield.

POPULATION EFFECTS (OR LACK THEREOF)

Admittedly, switching over a single case is a knee-jerk reaction as the likelihood that flipping on my lights realistically has a greater chance of resulting in the death of an eagle from a wind turbine or electrical lines. Even in the face of these other significant mortalities, eagle populations are still doing very well, and there will inevitably be mortality from humans' presence on the landscape. In the whole scheme of things, a single raptor I may inadvertently poison could just be considered a natural mortality which isn't affecting the overall status of raptors, though the same could be said about coming across a deer in a fence. That single animal doesn't have any overall effect if I help it out of the fence or not, but to me, that doesn't justify just driving away.

The condor is the least of my concerns while hunting in Montana, and I personally chose to switch because of the research. To me, these data clearly demonstrate the (potential) lethal effects of consumed lead on a single bird. So why don't we just ban lead bullets outright some might ask? Because wildlife is managed at the population level by the best available science, and most lead bullets on the landscape aren't the problem. It is the small percentage of those lead-based bullets that hit an animal at a high enough velocity to fragment. It is only those fragments remaining in

either gut piles or boned-out carcasses left available to raptors that are the concern.

EFFECTIVENESS OF NON-LEAD PROJECTILES

Let's address how lethal a non-lead projectile is. A lead bullet, upon entering an animal, mushrooms and drives shrapnel as well as bone fragments outward from a wound channel creating massive internal bleeding and possibly hydrostatic shock incapacitating the target, hopefully immediately. The FBI has done significant research on the stopping power of particular bullets—for obvious reasons—their lives depend on it. While not as much research has been conducted on these same effects to wildlife, we can assume the same principles are at play. Their finding is that a large and long wound channel leads to massive blood loss and the target quickly expires. A lead bullet, upon entering the body of the animal, commonly fragments, creating numerous smaller channels. But the main wound channel is what the FBI determined to be the biggest factor on how lethal a particular bullet style was.

Early non-lead bullets and even some heavily jacketed lead bullets would, and did, fail to expand and were not very effective. This is not a problem today with the non-lead options on the market. They expand rapidly and provide terminal performance as good or better than their lead counterparts. In terms of accuracy, I have found no variation in precision between non-lead and lead-based projectiles. I have worked up loads for certain rifles that have a preference for one bullet over another, but the likelihood the gun prefers a lead or non-lead bullet seems about equal in my testing. I have found similar results in factory loads. The biggest difference I have found is that pressures are indeed higher with non-lead bullets, so when switching over, shooting a 120-grain projectile with the same powder charges as you did with a 120-grain lead bullet is not a safe or reliable approach. For nearly all our hunting rifles we have converted our loads to either non-lead factory or handloaded non-lead rounds. The transition has been the same with any switch in bullet type. My personal shooting range goes to 200 yards, and for a load in my mind to be considered successful I must be able to deliver a 5 shot, 2-inch group. This standard has been obtainable in all the rifles we have switched over.

I first began hunting with a non-lead Barnes projectile out of my 7mm Remington Mag. It delivered a devastating blow to a 6½ -foot black bear with a facing shot at 40 yards in the mountains of Montana. My wife encouraged me to deliver a follow-up which I did, though inspecting the wound during processing I was convinced the first would have been fine. That same round and rifle made the trip with my dad to Alberta for big rutting mule deer, and the combo impressed him so much I no longer own that setup! It took another muley buck this fall at 200 yards, and a mature whitetail the previous year at the same distance. Neither buck moved more than 25 yards after bullet impact. I switched to 225-grain Barnes factory loads in my .338 Winchester Mag. and found similar results on two moose, two black bears, and a barren ground caribou at 300 yards. This year we converted all our hunting rounds to non-lead including my wife's 28 Nosler which accounted for her mule deer this fall and which I used to take two Sitka blacktail. A once-in-a-lifetime musk ox hunt came to a quick conclusion with two E-Tip loads out of my 30 Nosler, and both my dad and I were shooting handloaded 140-grain Nosler E-Tips out of my 6.5-284 Norma this year for Montana antelope. Both bucks were quickly dispatched, the first being at 250 yards and the second beyond 400 yards.

Heavy skinned game, light skinned game, close shots, longer shots, expensive factory ammunition, mid-range factory ammunition, hand loads; none of these factors seemed to matter. Remington is even loading a Barnes bullet into .308s which

LEFT TO RIGHT: This barren ground caribou was taken in Alaska with Barnes from a .338 Winchester Mag. Justin took this Sitka blacktail with E-Tips from a 28 Nosler. While hunting in Nunavut, Canada, he took this musk ox using E-Tips from a 30 Nosler. This pronghorn was taken with hand-loaded E-Tips from a 6.5-284 Norma.

BELOW: Justin's musk ox exhibited the effectiveness of the non-lead bullets on heavy-skinned game. Both of the bullets were recovered just under the hide on the off side of the animal.

can be bought for $36 a box. While a bull didn't cooperate to verify performance for my wife, these were the rounds she took on a Saskatchewan moose hunt which grouped MOA out of her Ruger M77 ultralight. If you can't find a non-lead bullet you and your guns like it's not the bullet composition that is the issue.

TOXICITY OF LEAD ALTERNATIVES

The final piece is that copper, which is the most common alternative bullet material, can also be toxic, and indeed it is. Again, back to the fragmentation discussion though, a good non-lead bullet will petal and retain its weight. This means it is not fragmenting and therefore is not leaving copper fragments in the carcass or guts in the field. In our testing and processing, we recovered the bullets from roughly one-fourth of the animals we killed with non-lead ammo. In a single instance, we found one full petal, and it was easily seen while trimming away damaged muscles near the wound channel.

CLOSING THOUGHTS

Continuing to use lead bullets is a decision best left up to the individual and not legislated. From an eagle population standpoint there is no reason to switch. If the thought of inadvertently poisoning a raptor or some other non-target species bothers you, a switch isn't the only option. If you never leave a gut pile where a raptor may scavenge it, or there are no raptors where you hunt, then it doesn't matter. If you choose not to use non-lead bullets but you want to eliminate the potential for lead exposure, you can bring the guts out with you and bury them deep enough a coyote won't be able to dig them up.

While researching and discussing this article, it came to light that the research in no way indicates any wildlife species population is being suppressed by the presence of lead on the landscape from bullet fragmentation—outside of condors which have a limited range. The decision comes down to personal ethic on whether a potential individual raptor poisoning justifies switching.

Addressing an issue on an individual animal basis becomes tricky as we actively go out and pursue individual animals as hunters. While this idea gave me pause, the difference in my mind was that a poisoning is inadvertent. We self-regulate in terms of selectivity of which game animal we choose to harvest and utilize. At the individual level, that seems contradictory in that we are concerned with an individual in some cases but not others. I would argue that hunters are always concerned at both the individual and population levels. We decide to take an individual as we know it either has no effect or helps the overall population. We still care for that individual and respect it. For me, this thought process made the change the right thing to do; knowing it would not influence the populations made no difference. I wanted to make my footprint on the natural world that much smaller, even knowing statistically it did not matter. ■