

Why switch to nontoxic alternatives?

The South Dakota Department of Game, Fish, and Parks (GFP) manages fish and wildlife species at a population level and while modern examples of lead ammunition causing population level impacts are rare, individual birds can be impacted. Lead ammunition has been found to cause lead poisoning in all raptor species including the Bald Eagle, which sometimes scavenges on field dressing remains left behind by hunters that may contain lead fragments from ammunition. Spent lead shotgun pellets also are picked up by feeding waterfowl and eroded in the gizzard, leading to sickness and death. Fortunately, with nontoxic shot required when hunting waterfowl and on many public lands of South Dakota, lead poisoning has become less of a problem over time. In fact, the state of South Dakota led the nation in implementing nontoxic shotshell requirements for waterfowl in 1988 (4 years before the federal ban) and for all small game on many public lands in the late 1990's. GFP and the Central Flyway states were also instrumental in ballistics testing that led to Tom Roster's Lethality Table that makes recommendations on nontoxic shot sizes for game birds at various ranges (see below).

Lead fishing tackle also has the potential to poison numerous species of waterfowl and other waterbirds including pelicans, herons, and loons. Symptoms of lead poisoning in birds include lethargy, green discharge from the vent, wing droop, incoordination, and weakness. Birds may succumb to lead poisoning directly, or the effects may increase the likelihood of another cause of death. There are many alternatives for lead sinkers and jigs. Steel, tungsten, bismuth, glass, and resin options are available to anglers. Some of the nontoxic tackle options are similarly priced to the lead counterparts, while some come at an increased price. However, some of the nontoxic options, such as tungsten, provide better performance than lead. Tungsten is 1.7 times denser than lead and has become popular with ice fisherman who want a bait to go deeper, faster, without increasing the size of a jig or sinker. Open-water fishing with tungsten jigs is also gaining in popularity.

It is the goal of GFP to provide hunters and anglers the information they need to make informed decisions when selecting hunting ammunition and fishing tackle. Many hunters and anglers have and continue to voluntarily switch to non-lead options, to reduce accidental lead poisoning in birds. Some hunters and anglers who make the switch speak of the satisfaction associated with knowing they do not run the risk of accidentally harming non-target birds. In addition to the environmental benefits many hunters also report increased accuracy and performance of non-toxic ammunition when compared to lead bullets and shot.

Hunters and anglers are the backbone of fish and wildlife conservation and have been for over a century. You can help continue this legacy by considering a switch to non-lead ammunition and fishing tackle.

Three Ps of Non-Lead Ammunition (From Arizona Game and Fish)

Precision — All non-lead ammunition is milled, one bullet at a time, on metal lathes utilizing uniform tools to ensure each bullet is identical, which improves precision. Traditional lead-based bullets are created in a brass cup with molten lead. This manufacturing process introduces inconsistencies that can reduce precision in the field.

Performance — Most non-lead bullets peel open rather than mushroom under compression as a lead bullet does. This opening mechanism requires less energy, while retaining nearly 100 percent of the bullet weight. This results in greater impact at reasonable ranges and deeper penetration.

Price — Non-lead bullets are all premium bullets and when compared to premium lead-based bullets are very similar in price. While cheaper lead-based options exist, they do not deliver the same performance on game as premium bullets.

TOM ROSTER'S 2016 NONTOXIC SHOT LETHALITY TABLE[®]

Proven Nontoxic Loads For Waterfowl, Doves, & Upland Game Birds¹ <i>Vel. Range Tested: 1,225 – 1,700 FPS</i> ACTIVITY	Observed Hunters' Typical Shooting Range During Activity (Yards)	Most Effective Nontoxic Shot Size(s) For Birds Listed Under ACTIVITY At The Distances Listed In The Second Column	Minimum Load Weight (Ounces)	Minimum Pellet Hits Needed on Lethal Areas for Clean Kills	Minimum Pattern Count Needed at Any Distance for Clean Kills (# of Pellets in 30" Circle)	Most Effective Choke(s) at Distance (Given in Lead Shot Choke Designations)	NOTE: The pellets in the steel shot loads listed in this table were traditional, highly spherical ball-shaped pellets of ~ 7.86 g/cc density and 90-95 DPH hardness. The HEVI-Shot pellets were of 12.0 g/cc density and are harder than traditional steel pellets.
Large Geese At Long Range Giant, Western, Atlantic and Interior Canadas	50-65 50-70	Steel BBB to T HEVI-Shot 2 to B	1-1/4 1-1/2	1-2 1-2	50-55 50-55	Improved Modified Improved Modified, Full	
Large Geese Over Decoys	35-50 35-50	Steel BB to BBB HEVI-Shot 2 to B	1-1/4 1-1/2	1-2 1-2	50-55 50-55	Improved Cylinder, Modified Improved Cylinder, Modified	
Medium/Small Geese Long Range Snow, White-fronted, Lesser Canadas	50-65 50-65	Steel BB to BBB HEVI-Shot 2	1-1/4 1-1/2	1-2 1-2	60-65 60-65	Improved Modified Improved Modified, Full	
Medium/Small Geese Over Decoys	35-50 35-50	Steel 2 to BB HEVI-Shot 4 to 2	1-1/8 1-1/4	1-2 1-2	60-65 60-65	Light Modified, Modified Improved Cylinder, Modified	
Large Ducks At Long Range Mallard, Black, Pintail, Goldeneye, Gadwall	45-65 45-65	Steel 2 to 1 HEVI-Shot 4	1-1/8 1-1/4	1-2 1-2	85-90 85-90	Improved Modified, Full Improved Modified, Full	
Large Ducks Over Decoys	20-45 20-45	Steel 6 to 2 HEVI-Shot 6 to 4	3/4 - 1 1-1/8	1-2 1-2	85-90 85-90	I.C. (20-35 Yds), Mod. (35-45 Yds) I.C. (20-35 Yds), Mod. (35-45 Yds)	
Medium Ducks Over Decoys Wigeon, Scaup, Shoveler	20-45 20-45	Steel 6 to 3 HEVI-Shot 6 to 4	1 1-1/8	1-2 1-2	115-120 115-120	I.C. (20-35 Yds), Mod. (35-45 Yds) I.C. (20-35 Yds), Mod. (35-45 Yds)	
Small Ducks Over Decoys Teal, Ruddy, Bufflehead	20-45 20-45	Steel 6 to 4 HEVI-Shot 6	1 1-1/8	1-2 1-2	135-145 135-145	Mod. (20-35 Yds), Full (35-45 Yds) Mod. (20-35 Yds), Full (35-45 Yds)	
Ring-Necked Pheasants	20-50 20-50	Steel 3 to 2 HEVI-Shot 6 to 4	1 1-1/8	2-3 2-3	90-95 90-95	I.C. (20-30 Yds), Mod. (30-50 Yds) I.C. (20-30 Yds), Mod. (30-50 Yds)	
Turkeys (Head and Neck Shots)	20-40	Steel 4; HEVI-Shot 6	1-1/4	3-4	210-230	Full or Extra Full	
Mourning Doves	20-45 20-45	Steel 8 to 7 HEVI-Shot 7 1/2	% -3/4 3/4	1-2 1-2	200-210 200-210	IC-8's/LM-7's (20-30 Yds); Mod>30 Yd I.C. (20-30 Yds); Light Mod (30-45 Yd)	
Northern Bobwhite Quail	20-30	Steel 8 to 7	% -3/4	1-2	200-210	Imp. Cyl., Light Modified	
Swatter Load For Wounded Birds	20-30	Steel 7 to 6	1	1	175	Improved Modified, Full	

This table summarizes Tom Roster's analyses to date of the lethality data bases for certain of the 16 U.S. steel vs lead waterfowl & dove shooting tests published between 1968 & 2014 & one steel-only pheasant shooting test (1999) plus lethality data bases owned by ammunition companies for birds taken with nontoxic shotshell loads Roster tested for them & the CONSEP Org. Note: Steel #BBB (.190") & HEVI-Shot #2 (.150") have exhibited the best all-around performance for taking geese; steel #3 (.140") & HEVI-Shot #4 (.130") the best all-around performance for taking ducks; steel #2 & HEVI-Shot #4 (.130") the best all-around performance for taking ring-necked pheasants; & steel 7's (.100") the best all-around performance for taking doves.

¹ These findings are derived from testing 2 3/4" 28 gauge; 3" 20 ga.; 2 1/2", 3" & 3 1/2" 12 ga.; & 3 1/2" 10 ga. steel loads; plus 2 3/4" 28 ga.; 2 1/2" & 3" 20 ga.; and 2 1/2" & 3" 12 ga. HEVI-Shot loads.

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