Small Game Hunter
Lead Shot Study

Executive Summary

A cooperative study conducted by:

Minnesota Cooperative Fish and Wildlife Research Unit
Minnesota Department of Natural Resources

Small Game Hunter Lead Shot Study

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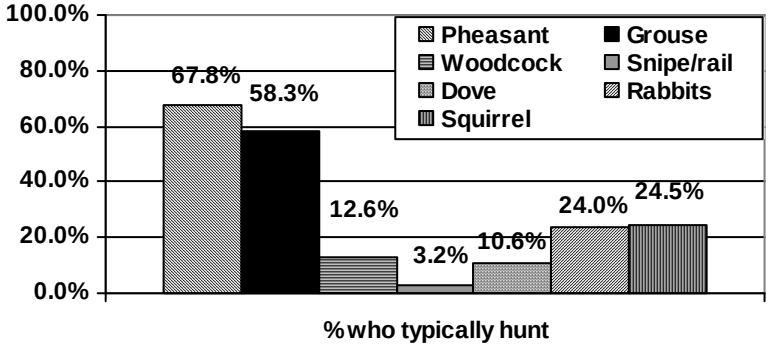
Executive Summary

The purpose of this study was to provide information about small game hunter perceptions and knowledge of using toxic/non-toxic shot and help identify appropriate message points for information and education programs addressing the issue of restricting the use of lead shot. Specific objectives of this study were to:

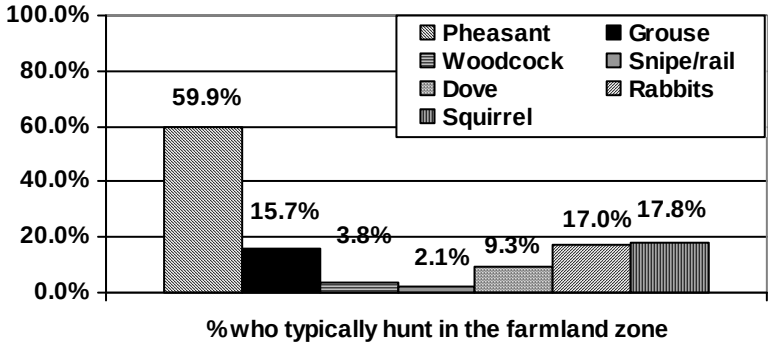
1. Identify levels of use of lead and non-toxic shot in the farmland zone by small game hunters;
2. Identify attitudes toward restrictions on toxic shot;
3. Identify support/opposition for restrictions on the use of toxic shot;
4. Identify the key beliefs affecting attitudes toward restrictions on toxic shot;
5. Identify the influence of conservation/stewardship values in shaping attitudes and beliefs about restricting the use of toxic shot;
6. Develop and test the effectiveness of targeted messages in changing attitude, beliefs, and behaviors concerning restrictions on the use of toxic shot.

In order to address objectives 1 - 5, a mail survey was distributed to 2,000 small game hunters, including 800 from the seven-county Minneapolis/St. Paul metropolitan area and 1,200 from non-metropolitan counties. Nine hundred and twenty surveys were returned for an adjusted overall response rate of 47.5%. This summary provides a review of results related to the first five objectives. The sixth objective will be summarized separately. In addition, we provide information about hunter participation and involvement, and hunter trust in the Minnesota Department of Natural Resources and media outlets.

Figure S-1: Proportion of respondents, statewide, who typically hunt for different types of small game



S-2: Proportion of respondents who typically hunt for different types of small game in the farmland zone



Hunter Participation and Involvement

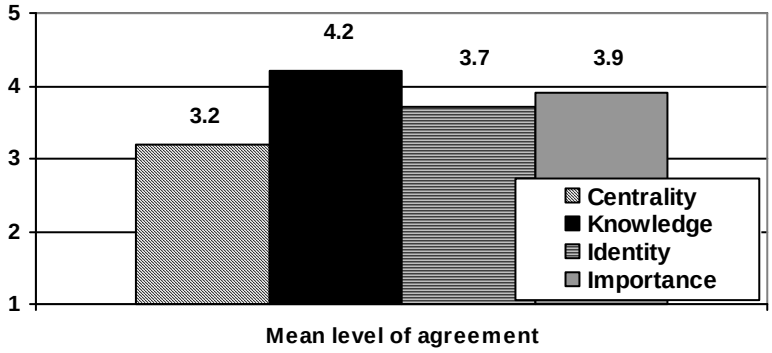
Nearly three-fourths of respondents (72.0%) had hunted for small game in the Minnesota farmland zone during the past 5 years. Over half of respondents reported that they typically hunted for pheasant (67.8%) or grouse (58.3%), while one-fourth or fewer respondents typically hunted for woodcock, snipe or rail, dove, rabbits, or squirrel in Minnesota (Figure S-1). Over half of respondents hunted for pheasant in the farmland zone of Minnesota (Figure S-2).

On average, respondents had been hunting small game in the Minnesota farmland zone for 21.4 years. About

half of respondents reported frequently or always hunting with a dog, and about 60% of respondents reported hunting with children under age 12 at least some of the time.

Respondents rated items designed to measure their involvement with small game hunting. Researchers have conceptualized leisure involvement as multidimensional. Leisure involvement may include knowledge of the activity, the centrality or importance of the activity to ones lifestyle, identity or self expression related to participation in the activity, and the general importance of the activity. Respondents rated items related to knowledge, importance, and identity higher than the centrality of the activity (Figure S-8).

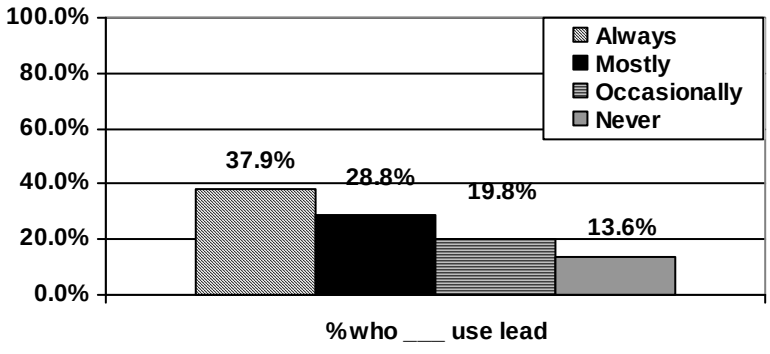
Figure S-3: Hunter involvement ratings



Shot and Shotguns Used for Small-Game Hunting

Survey recipients were asked if they always, mostly, occasionally, or never used lead shot for hunting small game. Over 60% of respondents used non-toxic (i.e. non-lead) shot at least some of the time when hunting for small game (Figure S-4). A slightly greater proportion of respondents who had hunted in the farmland zone in the past 5 years (14.2%) reported that they never used lead shot ($\chi^2 = 12.09$, $p < 0.01$). The majority of respondents reported using lead shot (compared to steel, bismuth or other) most often when targeting specific types of small game. However, use of lead shot varied depending on the game hunted. Nearly 4 in 10 respondents used non-toxic shot to hunt pheasants or snipe, but less than 2 in 10 used non-toxic shot to hunt grouse or woodcock. In general respondents reported using less than one box of shot per season for hunting each type of small game. The majority of respondents reported that they bought loaded shotgun shells (94.1%) compared to self-loading shells. On average, respondents had 10 boxes of loaded shotgun shells on hand.

Figure S-4: Proportion of respondents who use lead shot for small game hunting



Respondents reported using 12-gauge shotguns most often to hunt different types of small game (Table S-1). Use of 12-gauge shotguns ranged from about half of respondents for hunting squirrel and rabbits to about three-fourths for hunting snipe/rail or dove, to nearly 90% for hunting pheasants. A substantive proportion of respondents reported using 20-gauge shotguns, with use ranging from 9.8% of respondents for hunting pheasant to 29.3% for hunting woodcock. Respondents also reported use of .410 gauge for hunting rabbits (18.7%) and squirrel (26.5%). Less than 10% of respondents indicated using .410 gauge for hunting other types of small game. Less than 5% of respondents reported using 28-gauge, 16-gauge, or 10-gauge shotguns for hunting small game.

Table S-1: Gauge of shotgun used most often to hunt for different species.

	n	% of respondents who used…[1]					
		.410	28 gauge	20 gauge	16 gauge	12 gauge	10 gauge
Pheasant	579	0.0%	0.2%	9.8%	1.7%	88.1%	0.2%
Grouse	480	5.0%	1.3%	23.2%	3.1%	67.1%	0.2%
Woodcock	92	2.2%	0.0%	29.3%	3.3%	65.2%	0.0%
Snipe/Rail	16	0.0%	0.0%	25.0%	0.0%	75.0%	0.0%
Dove	76	3.9%	2.6%	15.8%	1.3%	76.3%	0.0%
Rabbits	123	18.7%	0.0%	26.0%	3.3%	51.2%	0.8%
Squirrel	98	26.5%	0.0%	25.5%	1.0%	46.9%	0.0%

[1] Percentages reflect only the proportion of statewide respondents that reported that they typically hunted for the species indicated.

[2] A stratified sample based on region of residence was drawn. Statewide data is weighted to reflect metropolitan/non-metropolitan proportions in the population and to correct for non-response bias.

Table S-2: Number of boxes of shotgun shells used most often to hunt for different species in the farmland zone.

	n	% of respondents who used…[1]					
		½ box or less	1 box	1-2 boxes	3-5 boxes	5-10 boxes	10+ boxes
Pheasant	510	27.5%	20.0%	31.6%	15.7%	4.9%	0.4%
Grouse	110	50.0%	18.2%	26.4%	4.5%	0.9%	0.0%
Woodcock	18	44.4%	38.9%	11.1%	0.0%	5.6%	0.0%
Snipe/Rail	4	50.0%	25.0%	25.0%	0.0%	0.0%	0.0%
Dove	65	26.2%	24.6%	32.3%	13.8%	1.5%	1.5%
Rabbits	103	50.5%	22.3%	16.5%	8.7%	1.0%	1.0%
Squirrel	105	57.1%	27.6%	11.4%	3.8%	0.0%	0.0%

[1] Percentages reflect only respondents that reported that they typically hunt for squirrel in the farmland zone

[2] A stratified sample based on region of residence was drawn. Statewide data is weighted to reflect metropolitan/non-metropolitan proportions in the population and to correct for non-response bias.

Attitudes and Norms About Banning Lead Shot in the Minnesota Farmland Zone

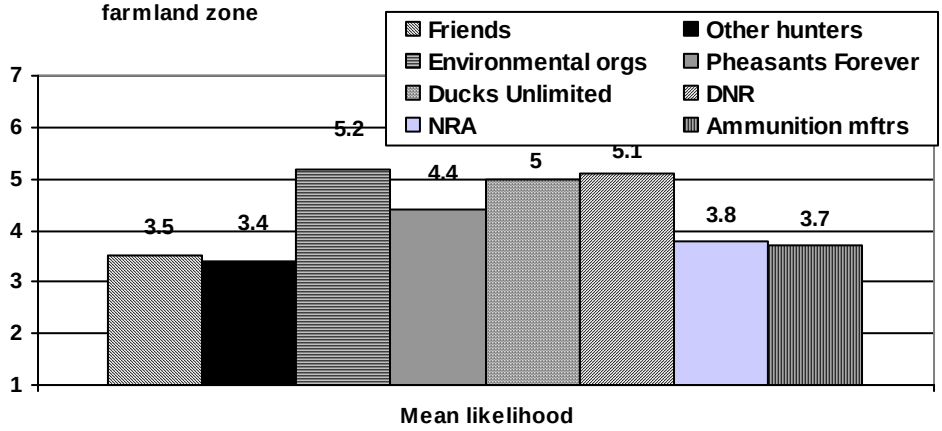
Attitudes. Respondents were asked to rate the likelihood of possible outcomes of banning lead shot for small game hunting in the Minnesota farmland zone. Items addressed environmental effects and impacts to hunters. Responses suggest that small game hunters perceive both environmental benefits and challenges to hunters as likely outcomes of a ban on lead shot in the farmland zone. Over half of the respondents felt that it was likely that banning lead shot for hunting small game in the farmland zone in Minnesota would: help protect wildlife from lead poisoning, benefit the quality of the environment, prevent the spread of lead in the natural environment, and improve awareness about the dangers of lead in the environment. However, over half the respondents also thought it was likely that a ban would: increase crippling and

wounding loss for small game hunting and require using less effective shot while hunting small game. Over three-fourths of respondents felt that the ban would require hunters to use more expensive ammunition. Over 40% of respondents felt that a ban would be unnecessary government regulation and would make it more difficult for some people to hunt. Although hunters reported that a ban might create some challenges, their response to several items suggests that hunters would adapt to a ban and that a ban might even improve the image of hunters. Nearly three-fourths of hunters said a ban is something most hunters would adjust to after a few seasons. Nearly half of hunters felt that it was likely that a ban would improve the image of hunters and that it was unlikely that a ban would decrease hunting opportunity in Minnesota.

Respondents were also asked to rate how good or bad the possible outcomes of banning lead shot would be using the scale. The majority of respondents felt that environmental benefits were good outcomes. Over 7 in 10 respondents felt that it was good to: protect wildlife from lead poisoning, benefit the quality of the environment, prevent the spread of lead in the natural environment, and improve awareness about the dangers of lead in the environment. However, over two-thirds of respondents felt the following outcomes for hunters were bad: unnecessary government regulation, increasing wounding loss for small game hunting, using less effective shot while hunting small game, using more expensive ammunition, making it more difficult to find shells, and decreasing hunting opportunities. Nearly three-fourths of respondents felt that improving the image of hunters was a good outcome. Nearly half of respondents felt that hunters adjusting to using non-lead shot was a good outcome, but over one-third were neutral about this outcome.

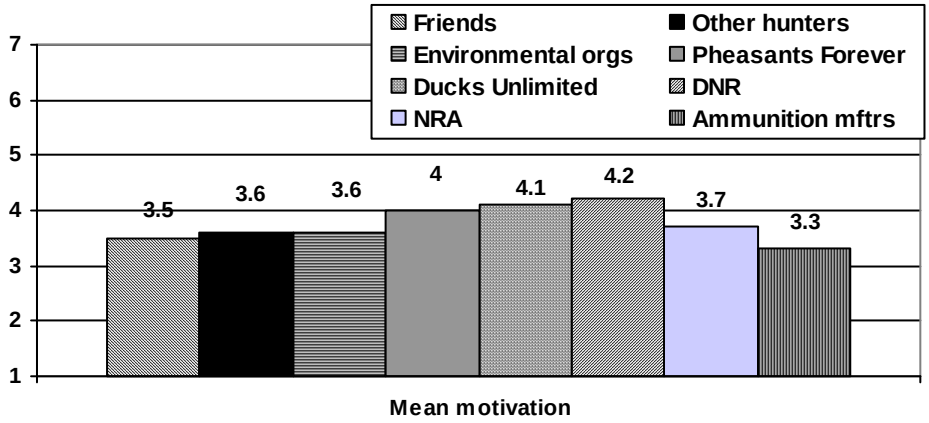
Norms. Respondents were asked to rate the likelihood of groups thinking they should support a ban on lead shot in the Minnesota farmland zone. Results are shown in Figure S-5. Respondents felt it was unlikely that their friends, other hunters, the National Rifle Association (NRA), and ammunition manufacturers would think they should support a ban. Respondents felt it was likely that environmental organizations, Pheasants Forever, Ducks Unlimited, and the Minnesota Department of Natural Resources would want them to support a ban. Respondents were also asked to report their motivation to comply with these groups; results are shown in Figure S-6. Respondents indicated that they would be somewhat more motivated to do what Pheasants Forever, Ducks Unlimited, and the Minnesota DNR wanted them to do. It should be noted that between one-third and one-half of respondents gave neutral responses to the items addressing whether they were motivated to do what referent groups thought they should do.

Figure S-5: Likelihood of groups supporting a lead shot ban in the farmland zone



Support for/Opposition to Restrictions on Lead Shot

Figure S-6: Motivation to comply with groups

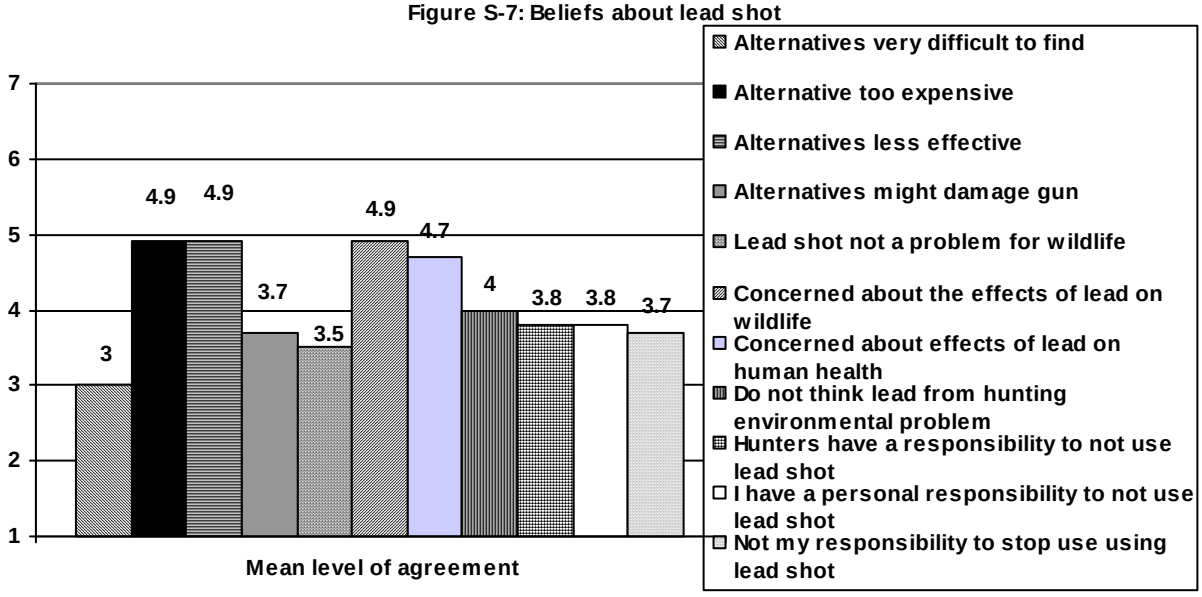


Respondents were fairly evenly split in their intention to support a ban on lead shot for hunting small game in the Minnesota farmland zone within the next 5 years—44.2% said it was unlikely that they would support such a ban, while 42.2% indicated that it was likely. Respondents were asked a series of questions asking whether such a ban would be harmful or beneficial, bad or good, and foolish or wise. About 45% of respondents indicated that a ban would be beneficial, good, and wise with another 25-35% of respondents feeling neutral about these items.

Beliefs Related to Lead Shot

Respondents were asked to rate beliefs about the use of lead shot for small game hunting. Items addressed (a) the availability, cost, and effectiveness of lead shot alternatives, (b) the problems associated with lead shot, and (c) responsibility for reducing use of lead shot (Figure S-7).

Figure S-7: Beliefs about lead shot



A substantial proportion of respondents were neutral or uncertain on their beliefs about lead shot. More than 25% of respondents rated the following beliefs neutral: (a) I think lead is more effective than alternatives, (b) I think alternatives to lead shot might damage my shotgun, (c) I think hunters have a responsibility to NOT USE lead shot, (d) I think I have a personal

responsibility to NOT USE lead shot, and (e) It is not my responsibility to stop using lead shot. There were several items where respondents were fairly evenly divided between those who agreed and those who disagreed, including: (a) I do not think the lead from hunting is an environmental problem (40.9% disagree, 39.9% agree), (b) I think I have a personal responsibility to NOT USE lead shot (40.1% disagree, 33.9% agree), (c) I think hunters have a responsibility to NOT USE lead shot (39.7% disagree, 31.0% agree), and (d) I think alternatives to lead shot might damage my shotgun (39.1% disagree, 30.7% agree).

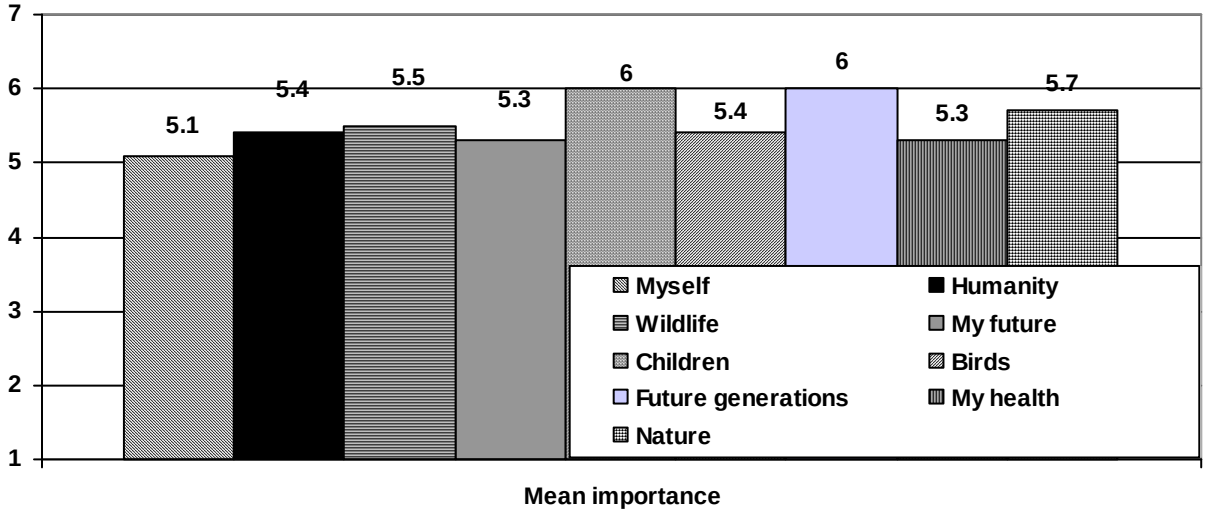
Environmental Values and Consequences of Environmental Problems

Survey recipients completed items that measure a new ecological paradigm, which measures individuals' endorsement of an ecological worldview (Dunlap et al., 2000). More than half of the respondents agreed that: (a) when humans interfere with nature it often produces disastrous consequences, (b) humans are severely abusing the environment, (c) the earth has plenty of natural resources if we just learn how to develop them, (d) plants and animals have as much right as humans to exist, (e) despite our special abilities humans are still subject to the laws of nature, (f) the earth is like a spaceship with very limited room and resources, (g) the balance of nature is very delicate and easily upset. More than half of the respondents disagreed that: (a) humans have the right to modify the natural environment to suit their needs, (b) the balance of nature is strong enough to cope with the impacts of modern industrial nations, and (c) humans will eventually learn enough about how nature works to be able to control it.

A substantial proportion of respondents were neutral or uncertain on survey items used to gauge environmental values. More than 25% of respondents rated the following items neutral: (a) human ingenuity will ensure that we do NOT make the earth unlivable, (b) the so-called "ecological crisis" facing humankind has been greatly exaggerated, (c) the earth is like a spaceship with very limited room and resources, (d) if things continue on their present course, we will soon experience a major ecological catastrophe, and (e) we are approaching the limit of the number of people the earth can support. There were several items where respondents were fairly evenly divided between those who agreed and those who disagreed, including: (a) if things continue on their present course, we will soon experience a major ecological catastrophe (35.6% disagree, 37.1% agree), (b) human ingenuity will ensure that we do not make the earth unlivable (37.6% disagree, 35.6% agree), and (c) the so-called "ecological crisis" facing humankind has been greatly exaggerated, (39.1% disagree, 30.7% agree).

Respondents were asked to indicate why they were concerned about environmental problems. Results are shown in Figure S-8.

Figure S-8: Concern about consequences of environmental problems important to



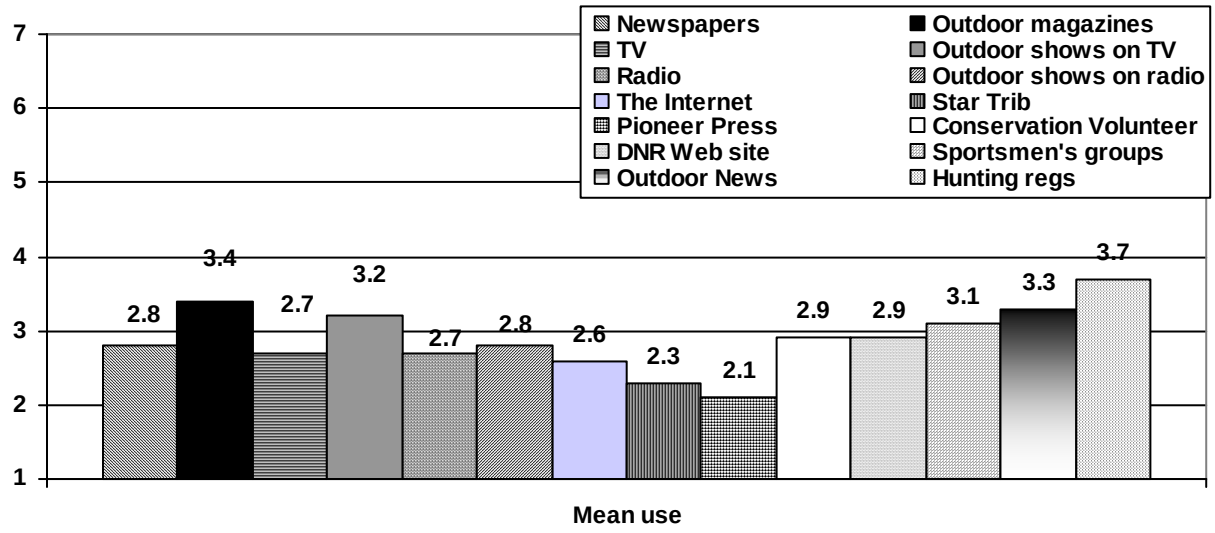
Attitudes About the Minnesota Department of Natural Resources and Research on Lead Shot

Respondents were asked to rate their trust in the Minnesota Department of Natural Resources (DNR) and in research about lead shot. On average respondents were fairly neutral in their trust of the Minnesota DNR. Between 40% and 50% of respondents agreed that: (a) when deciding about the use of lead shot for small game hunting in Minnesota, the DNR will be open and honest in the things they do and say, (b) the DNR can be trusted to make decisions about using lead shot for small game management that are good for the resource, (c) the DNR will make decisions about using lead shot for small game in a way that is fair, and (d) the DNR listens to small game hunters' concerns. Between one-fourth and one-third of the respondents neither agreed nor disagreed with these statements about the Minnesota DNR. Two statements addressed the influence of research on support for a ban on lead shot—two-thirds of respondents would be more likely to support a ban on lead shot if research shows that it has a negative effect on game species or on non-game species.

Trust in and Use of Media Resources

Respondents were asked to indicate how much they rely on and trust information about hunting from 14 sources (Figure S-9).

Figure S-9: Trust in media sources



Relationship of Attitudes and Norms to Support for a Lead Shot Ban

We compared the attitudes about a ban on lead shot in the farmland zone between respondents who were likely to support to those who were unlikely to support such a ban. We identified 7 key outcomes (i.e. protecting wildlife from lead poisoning, benefiting the quality of the environment, unnecessary government regulation, improving the image of hunters, preventing the spread of lead in the natural environment, decreasing hunting opportunities, and improving awareness about the dangers of lead in the environment) where ban supporters and opposers differed in whether they thought the outcome was likely or unlikely to occur.

We also compared the norms about a ban on lead shot in the farmland zone between respondents who were likely to support to those who were unlikely to support such a ban. We identified 4 key groups (i.e. friends, other hunters, Pheasants Forever, and the NRA) where ban supporters and opposers differed in whether they thought the group would be likely or unlikely to support a ban.

We found respondent attitudes, but not norms, were significant predictors of intention to support a ban on lead shot for hunting small game in the Minnesota farmland zone. This suggests that DNR communications emphasize the key beliefs that relate to peoples' attitudes about a lead shot ban. If one or more of the targeted beliefs is changed, hunters may be more likely to change their attitude and more likely to change their intention to support a ban. Specifically, the DNR might want to emphasize that a ban on lead shot would protect wildlife from lead poisoning, benefit the quality of the environment, improve the image of hunters, prevent the spread of lead in the natural environment, improve awareness about the dangers of lead in environment, but that a ban would not decrease hunting opportunities or lead to unnecessary government regulation.

Conclusions

These survey results suggest that many small game hunters use non-toxic shot, at least some of the time. However, hunters are fairly evenly split in their likelihood of supporting a ban on the use of lead shot in Minnesota's farmland zone. Responses suggest that many small game hunters perceive both environmental benefits and challenges to hunters from a possible ban on lead shot in the farmland zone. Likelihood of supporting a ban on lead shot in the farmland zone was positively correlated with pro-ecological values and with trust in the Minnesota Department of Natural Resources. It was negatively correlated with years of hunting in the farmland zone, involvement in small game hunting, frequency of using lead shot, number of boxes of loaded shotgun shells on hand, frequency of hunting with a dog, and frequency of hunting with children under age 12. There were few differences between metropolitan and non-metropolitan small game hunters in their beliefs, attitudes, and norms related to lead shot.