

Briefing

Information on non-toxic alternatives to lead shot

Efficacy of non-toxic shot

There remain many myths about non-toxic shot. These are sometimes perpetuated because of fear or resistance to change, because of vested interests from those profiting from sale of lead, or because of memories of the early non-toxic shot from the 1980s which was not so good. Today there are enough modern non-toxic shot types to suit any type of shooting as explained by the hunters themselves on this [FACE guidance website](#). This increasing range of non-toxic alternatives is available from standard to high velocity types. Innovation would be helped by creating a guaranteed market for non-toxic ammunition.

This [paper from 2015](#) (including an author from University of Applied Sciences, Eberswalde) deals specifically with the myths around non-toxic ammunition including the question 'are alternative shot types as effective as lead in killing birds?' To which the answer is 'yes' and a range of research is cited.

Decades of practical experience of using only non-toxic shot in [Denmark](#) and the Netherlands is testament to the efficacy of the non-toxic products including for shooting large geese. [Research from France](#) illustrates well that poor efficacy of killing is not due to the shot type but instead to factors such as wind speed and human behaviour.

'Coatings' on lead shot have been repeatedly suggested over the years. These have been repeatedly dismissed as they would not be able to withstand grinding in a birds' muscular stomach. The issue has been covered most recently in this paper from 2018. More importantly, 'coatings' on lead shot are completely unnecessary as alternatives to lead work so well and have none of the extensive disadvantages of toxic lead which will continue to create a toxic legacy into the future affecting agricultural soils and human health.

Welfare of animals

To imagine that we need to keep using lead for welfare reasons is one of the most fatuous arguments – indeed it is outrageous. Wounding rates with lead shot (i.e. birds alive but wounded and containing lead shot-in pellets) can be more than [one third for geese](#). Lead is not a magic ammunition. And lead poisons slowly. It is [painful](#), the bird's gut becomes paralysed, the bird may feed but this just fills up the neck as the bird starves. Poisoned birds may lose the use of their legs and wings, dragging themselves about in fear until they are taken by predators. Poisoning of what is literally millions of waterbirds every year in Europe, of which one million die, is a considerable welfare concern. [This video](#) illustrates what poisoning looks like. Hunters using lead may not intend to poison but that is what they do. Steel shot removes all of these considerable welfare concerns.

Some references on non-toxic shot (note most of the current research focusses now on lead bullet alternatives as there are few new research needs for lead shot alternatives).

[Switch to non-toxic shot in the Camargue](#), France: effect on waterbird contamination and hunter effectiveness -Mondain-Monval JY, Defos du Rau P, Guillemain M, Olivier A. (European Journal of Wildlife Research, 2015)



[A comparison of lead and steel shot loads for harvesting mourning doves](#) Pierce BL, Roster TA, Frisbie MC, Mason CD, Roberson JA (Wildlife Society Bulletin, 2015)

[Chemical compositional standards for non-lead hunting ammunition and fishing weights.](#)
Thomas V. (Ambio, 2018)

[Availability and use of lead-free shotgun and rifle cartridges in the UK, with reference to regulations in other jurisdictions](#) Thomas V (Oxford Lead Symposium Proceedings, 2015)

[Reducing wounding of game by shotgun hunting: effects of a Danish action plan on pink-footed geese.](#)
Noer H. Madsen J, Hartmann P. (Journal of Applied Ecology, 2007)

[Transitioning to lead-free ammunition use in hunting: socio-economic and regulatory considerations for the European Union and other jurisdictions](#)
Thomas V, Kanstrup N. (Environmental Sciences Europe, 2020)

[The transition to non-lead sporting ammunition and fishing weights: Review of progress and barriers to implementation](#) Thomas V, Kanstrup N, Fox AD (Ambio, 2019)

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