Use of an electronic device to determine the principal metal types of shot within intact shotgun cartridges

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Abstract

Compliance with existing partial statutory bans on the use of lead shotgun cartridges for shooting live quarry animals in the United Kingdom and European Union has generally been low. However, shooters in Denmark complied with a ban in 1996 covering all habitats after an initial period of monitoring. In the United States of America, the use of lead shot for hunting waterfowl was banned in 1991 and a national system of federal and state wildlife conservation officers enforces the law and monitors compliance. A portable electronic device (HOT*SHOT) enables officers to identify shooters' intact ammunition as lead or non-lead in the field. This paper describes the first documented tests of the accuracy of this device on brands of shotgun ammunition used in Europe. HOT*SHOT was found to be accurate in identifying shot of all metal types widely used in Europe as lead or non-lead. It correctly identified cartridges containing bismuth and tungsten polymer shot which, unlike steel and tungsten-iron alloy, could not be identified as non-lead by using a magnet. Some rarely-used non-lead types (tin, copper, zinc and an alloy of bismuth, aluminium, tin and zinc) were misidentified as lead. Legal restrictions on the use of lead shot in all habitats will come into full force in the UK on 1 April 2029 and are likely to become law within the EU within a few years. Government agencies, statutory authorities, police forces, shoot operators, wildfowling clubs and retailers of game meat products could use HOT*SHOT to detect covert illegal use of lead ammunition and provide assurance that only non-lead shotgun cartridges are being used. However, additional regulations would be needed to maximise the effectiveness of compliance monitoring.

Key words: cartridges, lead shot, monitoring, non-lead shot, regulation.

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Lead (Pb) is a metal toxic to vertebrates and of no benefit to them (ATSDR 2020). Lead shot, contained in cartridges fired from shotguns, is in widespread use globally for the shooting of live quarry animals, especially small game animals, including birds. Most of the shotgun pellets fired are deposited into the wider environment where they are often ingested by wildfowl, some other waterbirds and terrestrial birds, mistakenly for grit or food, causing lead poisoning. Predatory and scavenging birds are also affected when they ingest shot or shot fragments in game animals killed or injured by shot, but not retrieved (Pain *et al.* 2015). Absorption of lead from fragments of shot present in the meat of wild-shot game animals poses risks to human health, especially for frequent consumers. These risks are of particular concern in groups especially vulnerable to the effects of lead, including children and pregnant women (ECHA 2023; HSE 2024; Pain *et al.* 2026).

Lead-based shot has been used for shooting live quarry in most European countries for more than 500 years (Markham 1621) and an industrial process for its large-scale manufacture was developed in 1782 (Guruswamy 1999). Whilst several countries have now banned the use of lead shot for shooting wildfowl and/or in wetlands, this usually does not extend to other small game species or in other habitats. The use of lead shot for live quarry shooting is banned in all habitats in only two European countries: the Netherlands (since 1993) and Denmark (since 1996) (Mateo & Kanstrup 2019). In February 2023, a regulation came into force in the European Union prohibiting discharge and carrying lead shot in and within 100 m of wetlands (EU 2021). In recent years, the appropriate EU and UK authorities, the European Chemicals Agency (ECHA) and the UK Health & Safety Executive (HSE), have conducted formal assessments of risks from the use of lead ammunition and the need for restrictions under the EU REACH (Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals) and UK REACH regulatory processes. In 2022, ECHA proposed a ban on the placing on the market and use of lead shot for any purpose and for the outdoor use of lead rifle bullets (with derogations) in the EU (ECHA 2022a,b). In February 2025 the European Commission published a draft regulation based on this advice, with a few amendments (EU 2025). This draft has not yet been approved by EU Member States and the European Parliament and Council and further discussions are underway (BirdLife International 2026). In 2024, HSE proposed a ban on the placing on the market and use of lead shot and large calibre lead bullets for shooting in all habitats in Great Britain to the UK Government and its devolved governments in Scotland and Wales (HSE 2024). In July 2025, the Department for Environment, Food and Rural Affairs (Defra) responded, announcing an intention to ban the placing on the market and use of lead shot and large calibre lead bullets (with derogations) for shooting from 2029 (Defra 2025). A Statutory Instrument introducing the regulation was laid before the UK Parliament on 3 March 2026 and came into force on 1 April 2026. This new UK government legislation (REACH (Amendment) Regulations 2026, SI 2026/

195; UK Parliament 2026) formally established a phased ban on the sale and use of most lead shotgun ammunition and bullets in England, Scotland and Wales. EU regulations apply in Northern Ireland.

There has been little enforcement of existing statutory regulations banning the use of lead shot in the UK and Europe. Compliance with most of them, when measured, has been low (Stroud *et al.* 2021; Pain *et al.* 2022; Strong *et al.* 2024), except in Denmark (Kanstrup & Balsby 2019). The situation in Europe contrasts with that in the United States of America (USA) where the use of lead shot for hunting waterfowl was banned in 1991 (Federal Register 1991). In the USA, a national system of federal and state wildlife conservation officers, including staff of the US Fish & Wildlife Service, enforces the law and monitors compliance with the waterfowl ban. A useful tool in this enforcement effort is a portable electronic device (HOT*SHOT) that enables the officers to identify quickly shooters' intact ammunition as lead or non-lead in the field (Thomas & Kanstrup 2023). The manufacturer does not state which shot metal types the device identifies correctly (Stream Systems 2025), but instead gives a link to USFWS websites. USFWS (2022, 2026) lists the following approved shot types as being identifiable using HOT*SHOT: Bi-Sn, Fe, Fe-W, Fe-W-Ni, Fe clad with Cu, W-Fe-Cu-Ni, W matrix, W polymer, W-Sn-Fe and W-Fe polymer. The types in this list that contain iron (Fe) can also be identified using ordinary magnets, instead of HOT*SHOT. The following approved shot types are listed as not being identifiable using HOT*SHOT, but identifiable using other methods: W-Sn-Bi (rare earth magnet), W-bronze (rare earth magnet), W-Sn-Fe-Ni (ordinary magnet) and corrosion-inhibited Cu (ultraviolet light). The method by which HOT*SHOT differentiates between metals is commercially confidential. Although HOT*SHOT has been in use in the USA since the 1990s, we are not aware of it having been used in Europe, or of a peer-reviewed published study of its accuracy in any jurisdiction.

Broad legal restrictions on the use of lead shot will come into full force in the UK on 1 April 2029 and are also likely to become law within the EU within a few years. Consequently, government agencies, statutory authorities and police forces will need to consider possible methods for monitoring compliance as an aid to enforcement. In addition to being of potential value for statutory regulation, HOT*SHOT may have applications for shoot managers wishing to operate lead-free shoots and in food safety checks required by food retailers. Some major UK food retailers, including Waitrose & Partners, have attempted to sell only game meat products from animals killed using non-lead ammunition. However, obtaining assured supplies of lead-free carcasses sometimes proved difficult in practice because some were obtained from shoots where the shooters did not all comply with requests to use only non-lead shotgun cartridges (Green *et al.* 2024a, 2025a). In this paper we report tests of the accuracy of HOT*SHOT for types of shotgun ammunition in use in the UK and Europe, in order to assess its potential value to the appropriate statutory authorities, shoot operators and food retailers.

Methods

We wished to test a wide range of types of shotgun cartridges used for shooting live quarry in the UK and Europe. To determine the types of shot to test, we collated results from all recently published studies on recovered shot types that we were aware of, conducted in Europe (from Britain, Spain and Denmark; Appendix 1), in which the metal type of shotgun pellets recovered from carcasses of wild-shot gamebirds (Common Pheasant *Phasianus colchicus* and Red Grouse *Lagopus scotica*) and waterfowl (mostly Mallard *Anas platyrhynchos* and other species of ducks) was identified. We then calculated, from data presented in these studies, the percentages of carcasses for which different types of embedded shotgun pellet were determined. Carcasses from which no pellets were recovered were not included. Two types of shot were recovered from a few carcasses, so percentages in Appendix 1 sum to slightly more than 100% for some studies. All of the studies were conducted at a time when some form of voluntary or partial or complete statutory intervention, intended to increase the use of non-lead shot, was in operation. The types of intervention concerned are outside the scope of this paper but are described in the source papers cited in Appendix 1. We classified interventions as: E = effective (< 5% of birds killed using lead shot); PE = partially effective (20–95% with lead shot); and I = ineffective (> 95% with lead shot). We calculated the potential error rate from hypothetical use of the HOT*SHOT device for each study as the percentage of non-lead shotgun pellets that were composed of zinc and copper, which HOT*SHOT would probably misidentify as lead.

Lead shot is by far the most frequent shot type used by shooters in most European countries, but some of the shot recovered were composed principally of other metals. However, non-lead shot was much less frequently recovered than lead shot, except in Denmark. Our results identified six metal types of shot recovered from carcasses of wild-shot birds: lead, steel (Fe), bismuth (Bi), tungsten (W), copper (Cu) and zinc (Zn) (Appendix 1). We consulted colleagues and searched websites of UK ammunition suppliers and manufacturers to find other, less often used, types to test. This resulted in the identification of other types of shotgun cartridges available to UK and European shooters containing pellets composed of tin (Sn), a W-Fe alloy, a Bi-Al-Sn-Zn alloy and lead electroplated with copper.

In the UK and the European Union, the purchase of shotgun cartridges is controlled by law and restricted to persons authorised to own shotguns. Because we do not have the licences necessary to buy cartridges ourselves, we tested cartridge cases containing shotgun pellets in two ways: (1) using cartridges possessed by colleagues who have UK shotgun certificates whilst the cartridges remained in their possession, and (2) using shot of known types acquired by licenced colleagues that we placed into empty fired clean plastic cartridge cases (*i.e.* containing no powder or primer), crimped at the open end to close them, sealed using a small piece of adhesive tape and labelled with the brand information for the shot it contained. The number of

cartridges tested of each brand ranged from one to five. We were unable to obtain cartridges or shot composed of copper or zinc for testing. We therefore purchased 3 mm diameter copper and zinc cylindrical rods, stated by the suppliers as being 99.9% pure. These were cut these into sections approximately 3 mm in length and tested, as described in point (2) above.

We purchased a HOT*SHOT device from the US company Stream Systems (Stream Systems, Concord, California, USA) in November 2025. The device consists of a plastic box 10 × 6 × 4 cm (length × width × depth) containing an electronic device powered by a 9V battery. It weighs 161 g. At the time of writing, our device is the model most recently released by Stream Systems. We operated the device according to the instructions provided by the manufacturer. We pressed the rocker switch on the device for approximately one second to activate it. The green reference point display light (labelled 5 in Fig. 1) illuminates to indicate that the device is ready to perform a test. We then slowly inserted the crimped end of a shotgun cartridge into the circular aperture and slid it into the device (Fig. 1). Using the coding system shown in Fig. 1, we recorded which of the ten coloured display lights was illuminated and then removed the cartridge. We also held a bar magnet weighing 6 g against the side of each cartridge when held vertically with the crimped end downwards and then released the magnet. We recorded whether the magnet fell off (not attracted) or was held in place (attracted, indicating steel shot). There was no indication of slight attraction insufficient to hold the magnet in place under gravity.

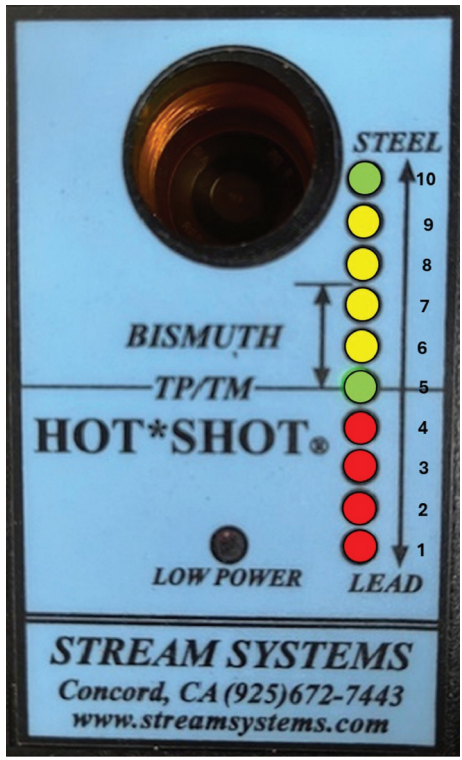


Figure 1. Image of the HOT*SHOT device showing the circular aperture into which the crimped end of an intact shotgun cartridge is inserted for testing. The coloured circles show the locations and colours, when lit, of the device's display lights. However, only one of these lights is illuminated at a time during operation. Numbers to the right of the lights show the coding of display lights used in Appendix 2 and the text.

The aperture of the HOT*SHOT device will accept cartridges of gauges as large as 7 gauge (22.2 mm diameter). We wished to test whether the HOT*SHOT output for the same metal type of shot was affected by the gauge of the cartridge case. We used two clean, empty, fired cases of gauges 12

(18.4 mm diameter) and 16 (16.8 mm). We decanted the same sample of shot of a given brand into these two cartridge cases in turn. We tested each cartridge in HOT*SHOT and recorded the output. We repeated this procedure for one example brand of each of the nine metal types in our study (Pb, Fe, W-Fe, W matrix, Bi, Sn, Bi-Al-Sn-Zn, Cu, Zn).

Results

Test results are shown in Appendix 2. We interpreted the results from the HOT*SHOT device as indicating lead if any of the four red lights illuminated (numbers 1–4, see Fig. 1), tungsten if the TP/TM green light (number 5) remained illuminated, bismuth if any of the yellow lights illuminated (numbers 6–9) and steel if the green light (number 10) illuminated. The HOT*SHOT device correctly identified all ten of the brands of cartridges containing lead shot as being lead. HOT*SHOT correctly identified (as lead) shot consisting of a lead core electroplated on the surface with copper. HOT*SHOT correctly identified all five of the brands of cartridges containing steel shot as being steel, but also identified two brands of tungsten-iron alloy as containing steel. The single brand of tungsten polymer was correctly identified, as were the two brands of bismuth. Hence, for all of these shot metal types, HOT*SHOT was completely accurate in determining whether the cartridge case contained lead or non-lead shot. However, HOT*SHOT inaccurately identified four types of non-lead metal as lead: a Bi-Al-Sn-Zn alloy, tin, copper and zinc. All of the cartridge types specified by the manufacturers as containing iron (Fe) or composed of a W-Fe alloy were magnetic and none of the other cartridge types were magnetic. However, HOT*SHOT also identified all cartridges with iron-containing shot as non-lead, so additional testing using a magnet did not add useful extra information. For the nine examples of each of the shot metal types, the HOT*SHOT output indicated the same metal type for both the 12 gauge and 16 gauge cartridge cases. The example brands of these metal types used in these tests are shown in Appendix 2.

We used the results from surveys of metal types of shot recovered from carcasses of wild-shot birds in Appendix 1 to calculate hypothetical future error rates from the use of HOT*SHOT for monitoring that would be expected if shooters were only to use non-lead cartridge types after a ban on lead and used the non-lead types in the same proportions as the non-lead shot types recovered during the surveys. Use of HOT*SHOT would have resulted in no errors for five of the eight surveys shown in Appendix 1, and in error rates of 1%, 11% and 12% in the other three surveys. These errors were due to the recovery in those three surveys of copper and zinc shot, which would have been misidentified by HOT*SHOT as lead.

Discussion

We found that the HOT*SHOT device accurately identified the shot types as lead or non-lead within intact cartridges containing all shot metal types currently in wide use in the UK and EU, but it misidentified some rarely-used non-lead types as lead. A much simpler device (a bar magnet) also correctly

identified cartridges containing steel and tungsten-iron alloy shot as being non-lead. However, it failed to identify cartridges containing bismuth and tungsten-polymer cartridges, whereas HOT*SHOT identified these metal types accurately. This is important because bismuth and tungsten-polymer shot are acceptable to shooters for some types of shooting and for shotguns for which the use of steel shot is not advised.

A law that cannot be enforced has little prospect of achieving its intended goal. The use of lead shot for live quarry shooting of waterfowl and/or in wetlands has been illegal for decades in all countries of Great Britain, but compliance with the bans remains low (Stroud *et al.* 2021; Green *et al.* 2023; Strong *et al.* 2024). There has been one prosecution for illegal use of lead shot in England during a period in which 13 million illegal shootings of ducks were estimated to have occurred and no prosecutions in Scotland (Stroud *et al.* 2021). The use of lead shot for shooting over wetlands is banned in Northern Ireland under different regulations. The UK and devolved governments of Scotland and Wales have legislated for a ban, beginning in 2029, on the placing on the market and use of lead shot for live quarry shooting in all habitats across Great Britain (UK Parliament 2026). This broader ban is likely to be more effective than the existing habitat/taxon-specific bans because sale is now included. However, given that many shooters have disregarded the existing waterfowl/wetlands bans, it is questionable that the new UK regulations will sufficiently alter the practice of UK shooters unless there is compliance monitoring and enforcement effort by the appropriate authorities. The UK HSE may monitor shotgun cartridge sales data and this may achieve some degree of compliance, but it is unlikely to be sufficient for several reasons. Shooters could potentially use stockpiled lead ammunition, self-load empty fired labelled cartridge cases that had previously contained non-lead shot with lead shot, or self-load plain unlabelled cartridge cases with lead shot. Purchase of shot and self-loading shotgun cartridges (also known as home-loading) are legal in the UK, if done by holders of a shotgun certificate, and guidance on methods is readily available (BASC 2023). Green *et al.* (2023) found that 13% of discarded spent cartridge cases collected from coastal and wetland sites in Scotland, where the use of lead shot is banned, were unlabelled and had probably been self-loaded with unknown types of shot. We are not aware of any proposals by the authorities to monitor or control self-loading in any of the countries in Great Britain or in the EU. In Britain, the statutory nature conservation agencies could monitor compliance with the ban. However, although the agency in Scotland (NatureScot) has done some monitoring of the existing ban on the use of lead shot in protected wetlands, it has not published any monitoring results. As far as we are aware, NatureScot has not asked police to prosecute any shooters for non-compliance with the wetland ban, despite evidence of frequent use of lead shot in protected Scottish wetlands (Green *et al.* 2023).

After the ban comes into force in Great Britain in 2029, UK authorities and stakeholders could use HOT*SHOT devices

to detect and monitor whether there is covert illegal use of lead shot. However, to do this, staff of appropriate authorities, such as statutory nature conservation agencies, would need powers to require shooters to provide cartridges for testing and the equipment and resources to do the tests. In the UK, police probably already have this power, but confirmation of this is needed from the government. Appropriate authorities in the USA (*e.g.* staff of the USFWS and state authorities) do have such powers. Federal regulation requires that a cartridge loaded with shot or coated shot must be demonstrated to be identifiable as not being lead in a portable field-testing device for use by enforcement officers before approval as non-toxic will be granted (CFR 2026a). Enforcement officers in the USA rely on such tools to verify that shot used for waterfowl hunting is not lead (USFWS 2026). We are not aware of any plans in the UK or EU to provide agencies with these powers. Responsible shooting estate owners, wildfowling clubs and shoot operators could use HOT*SHOT to help ensure that their paying guests and members comply with the law by using non-lead cartridges. Use of HOT*SHOT prior to shooting would enable shoot managers to prevent further lead contamination of both wildlife habitats and of the game meat sold to the public and consumed by shooters, estate staff and their families. Purchase and operation of a HOT*SHOT by a shoot would be a low-cost investment (*e.g.* approximately £500 in 2026) and would create an incentive among shooters to comply with a national regulation. Similarly, retailers of game meat products could require the use by of HOT*SHOT by their suppliers during shoots to test a representative cartridge from each individual shooting.

If shooters use similar types of non-lead ammunition after the ban as they have done recently, the use of HOT*SHOT to detect illegal use of lead shot would have a low, but non-zero, "false-positive" error rate because we found the tin, copper and zinc shot tested to be misidentified by HOT*SHOT as lead. If the use of new non-lead shot types that test as lead in HOT*SHOT, such as Bi-Al-Sn-Zn alloy, increases, this would increase the error rate. The potential problems arising from false positive HOT*SHOT errors have largely been avoided in the USA through their non-toxic shot approval process. The USA and Canada are the only countries with national legislation requiring that candidate types of non-lead shot be tested scientifically to evaluate their toxicity to wildlife and other ecosystem components (USFWS 1997, 2013; Thomas 2019). Non-toxic shot is defined as any shot type that does not cause sickness and death when ingested by migratory birds. Approval requires that shot types meet specific toxicological and other criteria set, including that the applicant demonstrates that the shot can be readily identified as non-lead with a standard field-testing device. A list of approved non-toxic shot types, along with field-testing methods, is provided by the US Fish & Wildlife Service (2022). However, they state that "the information in the 'Field Testing Device' column is strictly informational, not regulatory". During the early days of non-toxic shot development, one of us (VGT) undertook toxicity testing of pure tin

shot, which passed the toxicity criteria but could not be distinguished from lead shot by the field-testing devices available at that time (magnets or HOT*SHOT) and so was not approved for use to shoot waterfowl. Although several shot types have been approved containing tin, these also contain other metals (often iron but also other metals), enabling them to be identified as non-lead using field testing devices (*e.g.* HOT*SHOT, magnets or rare earth magnets) (USFWS 2022). New UK regulations and those planned in the EU do not include such measures.

Apart from facilitating the use of HOT*SHOT, banning the use of zinc shot in the UK and EU would have advantages in protecting wildlife. Shot composed of 98% zinc were found to be toxic to Mallards (Levengood *et al.* 1999, 2000), which precluded their being given approval under US federal legislation (Thomas 2019). However, use of shot with a core of another non-lead metal coated with a thin coating of zinc was approved, *i.e.* "Coatings of copper, nickel, tin, zinc, zinc chloride, zinc chrome, fluoropolymers, and fluorescent thermoplastic on approved nontoxic shot types also are approved" (CFR 2026b).

We conclude that the use of the HOT*SHOT device by appropriate authorities and shoot operators in the UK and EU for monitoring the illegal use of shotgun cartridges containing lead shot would make a valuable contribution to increasing and assuring compliance, although the use of additional testing methods may be needed for certain shot types, as is the case in the USA (USFWS 2022). However, none of the currently available monitoring tools are likely to be used to their full effect in the absence of addition legal requirements for the approval and field-testing of shot types. We are not aware that the appropriate authorities in the UK or EU are planning such regulations. We suggest that adjuncts to new UK and EU regulations should contain provisions for further testing of proposed new non-lead shot types to ensure that they are also non-toxic, and the publication of approved lists of non-toxic shot along with simple methods, such as HOT*SHOT, for detecting them in the field. Similarly, it would be prudent to assess the environmental effects of uncoated copper shot, as copper has variable water solubility under different environmental conditions, so additional research on potential environmental impacts is warranted (Thomas *et al.* 2007; Fäth *et al.* 2018).

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Appendix 1. Percentages of carcasses of wild-shot birds from which six types of embedded shotgun pellet were identified.

Principal element	**Common Pheasant**	**Mallard**	**Common Pheasant**	**Common Pheasant**	**Mallard**	**Waterbirds**	**Common Pheasant**	**Red Grouse**
Pb	2.0	3.4	90.9	51.9	75.4	23.4	96.7	100.0
Fe	75.6	84.5	9.1	40.7	11.0	89.2	2.2	0.0
Bi	19.9	4.7	0.0	5.6	12.5	0.0	0.7	1.3
Zn	0.0	0.0	0.0	5.6	0.0	0.0	0.4	0.0
Cu	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Uncertain	3.4	8.1	0.0	0.0	1.8	0.0	0.0	0.0
No. of carcasses	447	148	22	54	833	445	1,030	78
Country	Denmark	Denmark	England	England	England	Spain	Britain	Britain
Period	2016–2017	2017	2022	2022	2001–2021	2007–2011	2020–2024	2024
Intervention	E	E	PE	PE	PE	PE	I	I
% Errors	0.0	0.0	0.0	10.7	1.0	0.0	11.8	0.0
Source code	1	1	2	3	4	5	6	7

Key to sources: 1. Kanstrup & Balsby (2019); 2. Green *et al.* (2024a); 3. Green *et al.* (2024b); 4. Strong *et al.* (2024); 5. Mateo *et al.* (2014); 6. Green *et al.* (2025a); 7. Green *et al.* (2025b).

Appendix 2. Results from tests of cartridge cases containing shotgun pellets of various types using the HOT*SHOT device and a bar magnet. The colour and code number of the display light recorded (see Fig. 1) is given, followed by the number of cartridges with that result in brackets. Tests involved intact shotgun cartridges or clean fired cartridge dases loaded with shot of a known metal type. The latter tests are marked with an asterisk. Tests of copper and zinc were conducted using pieces of metal rod instead of shot (see text). [+]This shot type is a lead core electroplated with copper. [g]This brand was tested in both 12 gauge and 16 gauge cartridge cases.

Cartridge type	Principal elements	Magnetic?	HOT*SHOT outcome	Accurate?	Light colour and code (*n*)	Total cartridges tested
Eley Select #7 24g 67mm	Pb	No	LEAD	Yes	Red 1 (2)	2
Eley Hi-Flyer Fibre #6 32g 67mm*	Pb	No	LEAD	Yes	Red 1 (1)	1
Eley Hi-Flyer Fibre #5 32g 67mm*	Pb	No	LEAD	Yes	Red 1 (1)	1
Eley VIP Game #6 30g 70mm*	Pb	No	LEAD	Yes	Red 1 (1)	1
Eley VIP Game #6 28g 67mm*	Pb	No	LEAD	Yes	Red 1 (1)	1
Eley Copper Zenith #6 30g 70mm*[+]	Pb	No	LEAD	Yes	Red 2 (1)	1
Gamebore Black Gold Dark Storm #6 30g 70mm	Pb	No	LEAD	Yes	Red 1 (5)	5
Gamebore Black Gold #6 32g 65mm*	Pb	No	LEAD	Yes	Red 1 (1)	1
Hull Three Crowns #6 23g 65mm[g]	Pb	No	LEAD	Yes	Red 1 (5)	5
Lyalvale Supreme Game #6 30g 65mm	Pb	No	LEAD	Yes	Red 1 (3)	3
Lightning Ultra Steel #1 30g 65mm*	Fe	Yes	STEEL	Yes	Green 10 (2)	2
Winchester Super X Drylok Super Steel #BB 46g 89mm*	Fe	Yes	STEEL	Yes	Green 10 (1)	1
Winchester Drylok Super Steel #3 43g 89mm	Fe	Yes	STEEL	Yes	Green 10 (5)	5
Gamebore Super Steel #7.5 24g 70mm	Fe	Yes	STEEL	Yes	Green 10 (2)	2
Gamebore Mammoth Steel Shot Hevi-Load #4 36g 76mm*[g]	Fe	Yes	STEEL	Yes	Green 10 (5)	5
Remington Hevi-Shot #4 35g 70mm*	W-Fe	Yes	STEEL	Yes	Green 10 (1)	1
Federal Premium Tungsten #7 57g 76mm*[g]	W-Fe	Yes	STEEL	Yes	Green 10 (1)	1
Gamebore Impact Tungsten Matrix #3 25g 67mm*[g]	W	No	TUNGSTEN	Yes	Green 5 (2)	2
Eley Grand Prix Bismuth Forest #5 26.5g 65mm*	Bi	No	BISMUTH	Yes	Yellow 6 (1)	1
Gamebore Bismuth #4 32g 65mm[g]	Bi	No	BISMUTH	Yes	Yellow 8 (4), Yellow 9 (1)	5
BioAmmo Blue #4 28g 70mm[g]	Bi-Al-Sn-Zn	No	LEAD	No	Red 1 (5)	5
Kent Tin Shot #5 39g 70mm[g]	Sn	No	LEAD	No	Red 1 (1)	1
Copper pieces*[g]	Cu	No	LEAD	No	Red 1 (2)	2
Zinc pieces*[g]	Zn	No	LEAD	No	Red 1 (2)	2