

## Poisoning People and Wildlife with Lead Ammunition: Time to Stop

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The high toxicity of lead has been well-known for centuries, however it continues to threaten wildlife and humans (1). Although several countries have banned the use of different forms of this metal (e.g., in gasoline, paint, etc.) to protect human lives (1, 2), lead ammunition continues to impact wildlife, mainly affecting waterfowl, which ingest lead pellets, causing thousands of deaths annually, and threatening endangered species (1). While several countries of the European Union and EU members have banned the use of lead ammunition in wetlands, similar restrictions are rarely applied in terrestrial ecosystems (3) where avian scavengers, some of them critically endangered, are now menaced by lead toxicity (4).

This problem goes beyond the conservation of birds though, because game meat becomes part of the human diet (5). Animals shot with lead projectiles are consumed all over the world, not only by hunters and local people, but also via export and sold in markets (2). The main producers of game meat are New Zealand, UK, Canada, the United States, and the rest of the EU. Main consumers of this food are Germany, Switzerland, France, the U.S., and Asiatic countries. In the EU alone, around 6,571,000 hunters fire more than 40,000 tons of metal pellets (mainly lead) per year (3). This lead, which is also deposited on the ground and water, may remain in the body of game as bullet fragments and can be ingested by humans and wildlife (5).

As one of multiple worldwide examples, in the southern tip of South America exotic species such as red deer (*Cervus elaphus*) and wild boar (*Sus scrofa*) are increasingly being used in Patagonian restaurants, and those species are generally obtained by hunting. Moreover, millions of European hares (*Lepus europaeus*) are hunted in Patagonia every year using lead bullets, for the purpose of exporting their meat. Between 1976 and 1979 Argentina exported to Europe more than 13 million kg of hare meat per year, and currently more than two million individuals per year are sold to Europe, mainly Germany, Holland, Belgium, Italy, France, and Switzerland. During the hunting season, a portion of shot individuals do not die immediately, but escape and die later in the field where they are available for scavengers (1, 4). Accordingly, people and fauna consuming game meat in several countries of the world may be exposed to lead (4, 5).

Despite the proven consequences for humans of lead ingestion, policies are lacking. Consumption of game meat can increase lead levels in the blood, particularly in children (1). Although regulations for lead meat contamination in the EU apply to livestock (e.g., cattle, sheep, pigs, and poultry), game meat is exempt (2). This is partly a consequence of cultural practice, and is an extremely serious problem (3). However, a regulation from the EU, for example—which imports large quantities of game meat, promotes this hunting, and consumes this meat—could be extremely helpful. A legislation demanding game meat free of lead by using nontoxic alternative ammunition would transform the situation for both wildlife in those countries where game is hunted and for citizens who consume this meat. A serious evaluation of the origin and quantity of game food consumed by each country of the world must be done. It could also add up if consumers demand game meat hunted with alternative bullets, and if hunters adopt conscious practices. Those relatively simple actions will help to definitively ban lead ammunition, and would protect both human and wildlife health.

### Literature Cited

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