



IWRC

Education and Resources for Wildlife Conservation Worldwide

Lead Poisoning POSITION STATEMENT

Lead poisoning is a cause of wildlife suffering around the world, a fact well supported with radiological and laboratory data in North America and Europe. Lead sources that are known to impact wildlife and sometimes humans include lead based paints, ammunition, fishing tackle, industrial and building materials, petrochemicals, and even lead contaminated drinking water and food. This position statement has been prepared to specifically address the incidence of toxicosis associated with the ingestion of lead based ammunition and fishing tackle. Over 500 peer-reviewed papers demonstrate the deleterious effects of lead on wildlife¹. Lead has been recognized as toxic to wildlife for over a century; and even sub lethal levels may cause immunological and neurological problems, biochemical and behavioral changes and physiological disorders that may affect immune response and reproduction². The chronic stage may be characterized by gastrointestinal stasis, and cause anemia, liver, kidney, and nervous system dysfunction.

Wildlife rehabilitation patients prompted research into secondary poisoning in birds of prey in the 1980's and 1990's³. Since then, several rehabilitation centers have reported lead poisoning as one important cause of individual ingress to their facilities.

Policy

- IWRC supports the elimination of lead released into the environment through the discharge of lead-based ammunition and fishing tackle, in order to safeguard wildlife, ecosystems, and human health. This objective should be achieved based on education, improving access to lead-free ammunition, and appropriate legislation.
- IWRC supports the use of non-toxic ammunition such as copper bullets and steel shot.
- IWRC supports the use of non-lead fishing tackle such as tin, steel, and tungsten.
- Wildlife patients [carnivorous species under care] should not be fed animals suspected to be injured or killed with lead ammunition unless carcasses are subjected to radiological examination.
- Animals shot with lead ammunition should be disposed of via incineration or burial to depth safe from scavengers in the local ecosystem.
- As an international council, we strongly recommend the development of research from countries with insufficient baseline data, with the aim of obtaining scientific-based support for limiting the global use of lead ammunition and fishing tackle in all countries.

Context: Background and Scientific Support for Position

Lead is toxic to living organisms. There is no safe level of lead exposure for humans^{4,5} or wildlife². Studies have found that more than 130 species, including mammals, birds, reptiles, amphibians, and fish, are affected by lead toxicity^{1,6-8}. Lead ammunition is banned completely in Denmark, Netherlands, and Sweden and in waterfowl hunting specifically in fourteen countries including the US and Canada⁹. Lead fishing tackle is banned completely in Denmark and some fishing tackle regulations exist in the UK, Canada, and in 6 US states¹⁰. Waterfowl mortality due to lead toxicity declined after the implementation of Canadian and US bans on lead shot for wetland gamebirds^{11,12}.



Acute lead toxicity causes anemia, ataxia, appetite loss, and behavioral changes, often resulting in sudden death⁷. Chronic lead toxicity results in gastrointestinal stasis¹³ and causes anemia, liver, kidney, and nervous system dysfunction¹⁴. Direct lead exposure happens when animals consume lead objects^{2,15}. This is common in gruiformes, galliformes², waterfowl¹⁵, doves, and loons⁸. Predators experience lead toxicity via indirect exposure, eating the tissues of species that were shot with lead ammunition or which ingested lead fishing tackle^{6,8,15}. Lead greatly affects diurnal birds of prey due to high gastric secretions¹³ that quickly break down lead in the gut and introduce it to the blood stream and later into liver, kidneys, and bone². Large, long-lived, slow breeding, social, obligate scavengers such as condors are particularly at risk of lead toxicity^{2,15}.

Remains of game are a primary source of lead for these species and periods of poisoning intensity occur during and directly after regional hunting seasons^{2,3,14,16}. Lead shot and bullets fragment upon impact², with fragments traveling 45cm from the wound tract^{17,18}. One-hundred-seventy³ (170) to over 200¹⁸ lead fragments can remain in a single gut pile.

Use of non-toxic ammunition would remove a primary source of lead exposure to terrestrial species^{2,6}. Use of non-toxic ammunition increases annual hunting costs by just 1-2%⁶. Non-toxic ammunition is widely available in North America^{6,9} and Europe with market availability expected to grow further with increased regulations on lead ammunition¹⁹. Contemporary non-toxic ammunition, including but not limited to steel shot, copper bullets, and metallic matrix core bullets are both accurate and lethal, making them humane hunting alternatives to lead²⁰⁻²³.

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