Lead Poisoning in Eagles

Helene Van Doninck

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Helene Van Doninck DVM is originally from Cape Breton Island and grew up in New Waterford. She graduated from the Atlantic Veterinary College in 1991, and practised as a small animal veterinarian in Ontario and Newfoundland before settling near Truro, Nova Scotia. She still practises part time at Central Nova Animal Hospital and has been a Veterinary Technology Instructor at the Nova Scotia Agricultural College. In 2001 she co-founded the Cobequid Wildlife Rehabilitation Centre, a volunteer-based registered charitable organization providing veterinary care and rehabilitation to injured, sick and orphaned wildlife. She delivers educational presentations to many groups and has provided instruction internationally on wildlife rehabilitation and medicine. She has special interest and expertise in the rehabilitation of raptors, seabirds, lead poisoned wildlife and oiled wildlife. Helene is currently conducting a hunter and angler outreach program which provides education on lead poisoning in wildlife from spent lead ammunition and lead-based fishing gear. She is also part of an active team dedicated to developing an oiled wildlife response network in Eastern Canada. Helene was the 2011 recipient of the Stan Hodgkiss Outdoorsperson of the Year Award, a national conservation award from the Canadian Wildlife Federation.

Lead has been known to be a toxic substance since the 1800s. In the past century steps have been taken to take it out of gas, paint, plumbing and other materials to reduce human exposure and illness from lead poisoning. In 1991 it was also removed from waterfowl hunting to decrease the number of deaths in waterfowl from ingesting lead shot on the bottom of waterways, and to prevent secondary poisoning of birds of prey who ate dead or dying ducks. Lead shot and rifle ammunition is still widely used in hunting upland game, deer, moose and most other species except waterfowl.

Lead poisoning has been documented in over 130 species worldwide, including humans. There has been extensive documentation worldwide showing that birds of prey, in particular scavenging species such as bald eagles, vultures and condors, are particularly susceptible to lead poisoning. In fact, up to 25-30% of bald eagles seen in rehabilitation centres across North America are suffering from lead poisoning.

The main reason birds like eagles will get lead poisoning is due to the behaviour of lead ammunition when it strikes an animal like a deer. Lead ammunition will fragment into many pieces as it penetrates the deer. For example, studies have shown that deer harvested with lead can have hundreds of fragments that can be found 18 inches or more from the wound channel. This presents risk of lead ingestion to both scavenging species and to humans eating meat harvested in lead.

Birds will obtain lead in several ways:

1. Animals that are shot and get away only to die later. These animals have lead in them which will be eaten by birds like eagles.

2. Many people shoot " nuisance" wildlife and leave the bodies behind, thinking they are providing food to eagles and other wildlife. These animals contain lead shot or rifle ammunition which will be eaten by scavengers.

3. Farmers often euthanize cattle or other livestock and leave the bodies for wildlife to consume. Again, lead is found in these bodies and is freely available for ingestion.

4. Gut piles left by hunters after harvesting an animal are the main and most common source of lead consumption in eagles. There can be hundreds of fragments in each gut pile and even one piece can be fatal to an eagle. Eagles will later find this gut pile or meat left behind from the wound channel and eat it, causing lead to enter their digestive system.

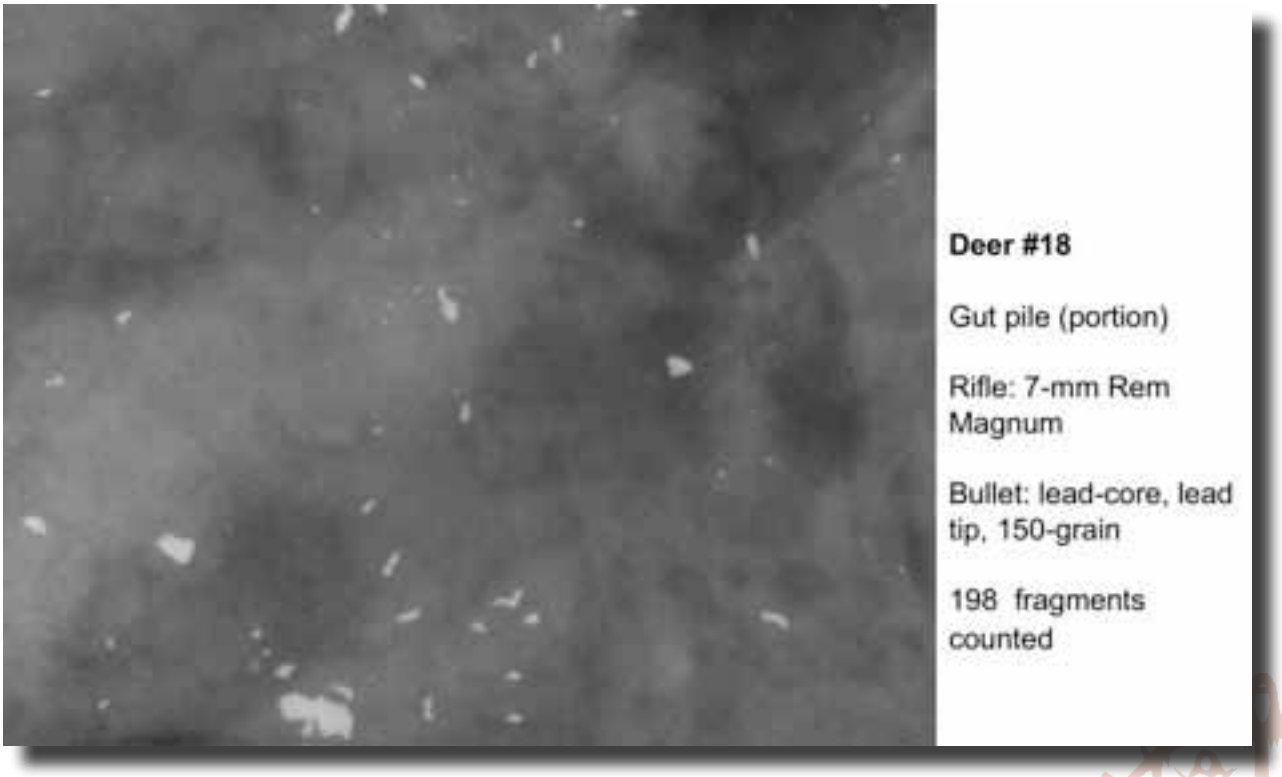
5. Eating lead-based fishing sinkers, lures and weights that are cut loose when tangled in river or lake bottoms, or eating similar gear left attached to fish.

Once an eagle eats meat containing lead, the poisoning process starts. Eating lead fragments is a particular problem for birds because of the way their digestive tract works. The acid environment in the stomach breaks the lead down and releases it into the blood, and the small stones kept in the gizzard will also grind the lead pieces down and make them available to the bloodstream. Once the lead is released into the blood stream it can start to cause toxic effects, and after circulating in the bloodstream it then settles in tissues like the brain and bones where it stays for life or until the bird dies. Lead poisoning affects the blood system, digestion, muscles, major organs like the liver and kidneys and nervous tissue like the brain. It eventually causes seizures and death over a period of days to weeks.

Birds with lead poisoning can sometimes be treated if they are captured early enough and the lead levels aren't too high, but most will die as they aren't found or they are found too late. Typically eagles with lead poisoning will be on the ground and unable to fly, they stagger or act like they are dizzy and they show little or no fear of humans .

Eating lead fragments in harvested meat is also of concern for people. Many of the fragments are too small to be detected in the mouth and when swallowed the acid environment in the human digestive tract can also release lead into the bloodstream. Experts now say there is no safe lead level in children and some areas that have studied lead fragmentation in harvested venison are recommending that it should not be fed to children under 6 years of age (as lead can affect the developing brain) or to pregnant women. More studies are presently being done to investigate this issue. Studies conducted by several departments of natural resources in the USA, concluded that after studying how far lead fragments can travel in meat, they could not recommend a safe distance to trim meat from the wound channel because the distance varied depending on the caliber of ammunition, the range from the animal and the location of the shot (hitting bone causes the lead to fragment more and to travel farther distances from the wound channel).

X-ray of a gut pile of a deer harvested with lead ammunition, white pieces are lead



X-ray of deer harvested with lead shot

X-ray of deer harvested with lead shot

Solid Copper Bullet

Copper bullet after striking an animal

Luckily there are alternatives to lead rifle ammunition. Copper and other alloy metal ammunition is now available. This ammunition does not fragment and is not toxic as scavengers eat it in harvested meat. The most common type used for deer and moose hunting is a solid copper bullet with a hollow tip that will expand when it hits the animal, resulting in a fast clean kill. If this ammunition is used the gut pile and other portions of the animal can be left behind without worry that another animal will get poisoned.

Presently copper ammunition is more expensive than premium lead ammunition but with increased demand, prices will decrease. Studies have shown the cost for ammunition represents only 1–2 % of the cost to hunt and at the most a box of copper ammunition could be $10–5 more. Considering most hunters will take several years to use a box of bullets the average increase in cost is $5–$6 more per year. Most hunters when surveyed would pay an extra $6 per year to not feed lead to their families and to prevent secondary death of animals like bald eagles from lead poisoning. The best way to increase availability of non-lead ammunition is to talk directly to the owners of local ammunition shops and ask them to bring in non-lead ammunition as the easier it is to find, the lower prices will become and people will be more likely to switch. There have been several areas where hunters have voluntarily switched from lead to copper ammunition and greater than 90% say that copper performs as well as or better than lead. These areas that switched also have many less lead poisoned animals and the average lead level in scavengers drops when lead is not used.

Lead poisoning in bald eagles and other scavenging species is a problem with a solution. It is easily prevented by voluntarily switching to non lead ammunition. If lead ammunition is used, the minimum precaution recommended is to bury or remove the gut pile and leave no parts of the harvested animal for scavengers to eat. Hunters have long been considered conservationists and switching to non lead ammunition is an opportunity for the hunting community to take a leadership role. Using non-lead ammunition protects people and wildlife and also decreases the amount of lead in the environment.

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