



## AVIAN & WILDLIFE HAZARD

# Lead Toxicity

Lead is among the most hazardous of environmental pollutants, and is toxic to both humans and wildlife when ingested. Strict regulations in the last 50 years have addressed lead in gasoline, paint and pipes, however discharge of lead ammunition is still largely unregulated, and poses a threat to humans, birds and other wildlife.

## SOURCES OF LEAD ON THE LANDSCAPE



**The most prevalent source of unregulated lead in the environment is lead ammunition used for hunting, for depredation control programs, and at outdoor shooting ranges.**

Lead ammunition fragments upon impact into hundreds of tiny pieces that can spread up to 17 inches from the wound channel. Scavenging birds like condors, vultures, eagles, hawks, ravens, and crows that feed on hunter-killed carcasses and discarded gut piles are highly susceptible to lead poisoning. In swans and waterfowl, ingestion

of fishing weights, shotgun pellets, or contaminated vegetation or sediments associated with lead mining and smelting wastes puts them at risk of lead poisoning. Lead poisoning is the primary impediment to the recovery of the California Condor (see next page).

At least 75 bird species have been documented with lead poisoning. Affected birds slowly succumb to kidney failure, central nervous system malfunction, and gastrointestinal complications, and even those that are treated may die. Lead poisoning is not just a direct mortality factor, but can also contribute to impaired breeding, foraging, migration, and chick rearing success.

Numerous studies have documented seasonal patterns in lead levels in eagles, ravens, and condors coincident with big game hunting season. At least 2,500 swans have died in Washington State and western Canada since 1999, primarily from lead poisoning.



**To date**, 29 countries have implemented voluntary or legislative restrictions on the use of lead ammunition and nearly half of all states have non-toxic regulations for hunting practices beyond the 1991 waterfowl lead ban.

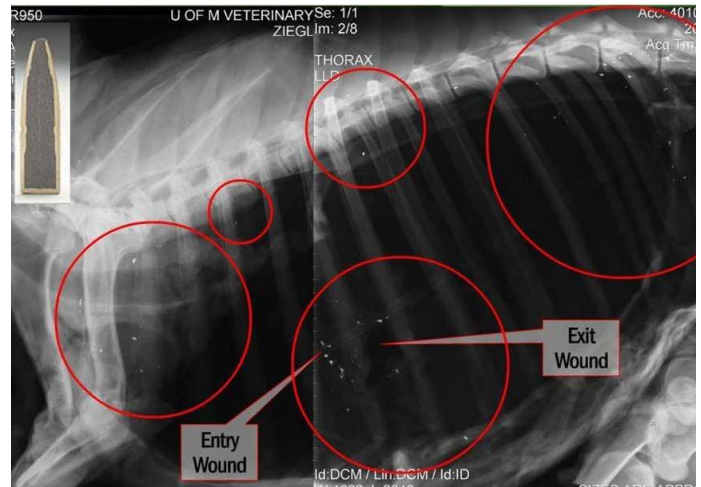
Many states have placed restrictions on the sale of small lead-based fishing tackle including NH, ME, NY, VT, WA, MA, CA as well as Canada and Great Britain.

## HISTORY OF LEAD REGULATIONS

- **1991** Lead shot banned in the US for waterfowl hunting over wetlands. *Result: Lower rates of lead poisoning in waterfowl*
- **1994** EPA proposed nationwide ban on the manufacture of lead fishing sinkers (*regulations not adopted*)
- **2008** California ban on use of lead ammunition for most hunting activity in the range of the Condor. *Result: Reduced lead exposure in Golden Eagles and Turkey Vultures*
- **2017** Obama era directive to phase out lead ammunition and fishing sinkers on federal land across the nation was overturned by the current administration.
- **July 2019** Full implementation of ban on the sale and use of lead hunting ammunition in the state of California.

## NONLEAD AMMUNITION

Nonlead ammunition has excellent ballistic qualities, is highly lethal, and does not fragment. It has also become increasingly available and price comparable to toxic alternatives, with many manufacturers producing a variety of non-lead calibers and weights. Much work is being done to raise awareness about the availability of non-lead ammunition, to build confidence in these alternatives, and to improve market visibility and labeling of nontoxic alternatives. Visit the Hunting with Nonlead Ammunition website for more information: <http://www.huntingwithnonlead.org/>. Ammunition exchange programs are helping to encourage use of nonlead ammunition, but even in these areas, lead poisoning continues to occur.



## LEAD-SHOT GAME AND HUMAN HEALTH

Fragmenting of lead shot upon impact means that the amount of lead in lead-shot meat often exceeds levels suitable for human consumption (Pain et al. 2010). Numerous studies have reported elevated lead levels in people that rely on lead-shot meat for subsistence (Johansen et al. 2004, Johansen et al. 2006, Tsuji et al. 2008) and also in people that eat game recreationally (Iqbal et al. 2009). Children are particularly sensitive to lead poisoning, and even very low levels of lead can cause permanent cognitive damage (Lanphaer et al. 2005).

## EFFORTS TO RECOVER THE CALIFORNIA CONDOR



The California Condor (*Gymnogyps californianus*) provides the most dramatic example of the catastrophic impact that lead exposure can have on wildlife. The critically endangered condor—Prey-go-neesh—once ranged from BC into northern Mexico. Condors feed on carrion and have massive beaks to tear through tough hides of large (and small) animals. Condors are long-lived birds that don't reach sexual maturity for 6-8 years, lay one egg per nesting cycle, and may only breed every other year. Their slow reproduction rate coupled with continued lead exposure has slowed recovery efforts for this iconic species.

Between 1982 and 1987, the last free flying birds were brought into captivity. Today, there are over 475 birds, over half of which are free-flying. While significant progress has been made to

increase their numbers, exposure to contaminated gut piles continues to be a serious impediment to the recovery of this species.

Plans are underway to reintroduce condors to the Bald Hills of Redwood National Park in Northern California. The Yurok Tribe, together with the National Park Service and USFWS, has spent nearly a decade planning for the return of this culturally and ecologically significant species to Yurok Ancestral Territory. This exciting news portends the return of California Condors to Oregon skies, and challenges us to ensure adequate protection of condors from lead in Oregon. USFWS's Environmental Assessment is due out in 2018. Please help us support condor reintroduction in Northern California, and push for development of a strong plan to protect them from exposure to lead!

**FOR MORE INFORMATION**, contact Mary Coolidge, Bird Safe and Non-Lead Campaign Coordinator at [mcoolidge@audubonportland.org](mailto:mcoolidge@audubonportland.org) OR visit <http://audubonportland.org/issues/hazards/lead>.

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