

# Bird Lead Fact Sheet

American Bird Conservancy

<http://www.abcbirds.org/abcprograms/policy/toxins/lead-fact-sheet.html>

This factsheet is part of the data being presented by American Bird Conservancy, American Association of Avian veterinarians, Center for Biological Diversity, and Project GUTPILE to the U.S. Environmental Protection Agency (EPA) in a petition to eliminate lead bullets and shotgun pellets in sport hunting, and require non-toxic fishing sinkers and lures. This petition is designed to halt lead deposition into the environment from hunting and fishing activities, because lost lead fishing gear and spent lead hunting ammunition cause the death of 10-20 million birds annually in the US.

All of these lead containing products now have commercially available non-toxic alternatives, so that EPA can develop regulations to require non-toxic rifle bullets, shotgun pellets, and fishing weights and lures throughout the US. Several States, the National Park Service, and the Wildlife Services Branch of USDA APHIS currently have regulations or policies to use non-toxic alternatives, but no national standards are in place.

## ***How much lead was put into the environment prior to the 1991 waterfowl lead ban, and how much lead is still being introduced?:***

Prior to the banning of lead shot for hunting waterfowl and coots, an estimated 2,721 metric tons of shot were deposited in United States wetlands annually (Pain 1992).

A global estimate of lead ammunition production in 2000 was 194,820 metric tons, accounting for 3% of the lead with consumer end uses (Nordic Council of Ministers 2003).

Using the annual expenditure estimate provided by the U.S. EPA, Scheuhammer et al. (2003b) approximated that 3,977 metric tons of lead fishing sinkers are sold in the United States annually. Scheuhammer et al. (2003b) also estimated that approximately 559 metric tons of lead sinkers are sold annually in Canada.

## ***Lead consumption by waterfowl:***

A study by Locke et al. (1997) estimated a 45% ingestion rate of lead pellets by sentinel mallards (*Anas platyrhynchos*) in a wetland enclosure containing more than 2 million shot/hectare in the upper 10 cm of sediment. In enclosures with 15,750 and 173,200 pellets/hectare, mallards exhibited ingestion rates of 4% and 34%, respectively (Locke et al. 1997).

Field radiography found that up to early 12% of spectacled eider adults and 2.5% of ducklings had ingested shot, and blood lead concentrations of  $\geq 0.5$   $\mu\text{g/g}$  wet weight were found in 20% of adult females and 6% of ducklings (Flint et al. 1997, Franson et al. 1998).

## ***Does the ban on lead shot save waterfowl?:***

Within five to six years following the ban on use of lead shot for hunting waterfowl, a large-scale study conducted in the Mississippi flyway demonstrated dramatic reductions in the ingestion of lead shot (Anderson et al. 2000). Of the gizzards containing ingested pellets, 68% of mallards, 45% of ring-necked ducks (*Aythya collaris*), 44% of scaup, and 71% of canvasbacks contained only nontoxic shot. Anderson et al. (2000) estimated that lead poisoning of mallards was reduced by 64% in the Mississippi flyway and projected that 1.4 million ducks of the North American fall continental flight were spared from fatal lead poisoning.

Another approach to assessing exposure to lead shot involves a threshold concentration of 0.2 ppm in blood (Friend 1985). Using this criterion, Samuel and Bowers (2000) demonstrated a 44% reduction in lead exposure of black ducks from Tennessee by comparing exposure prevalence in 1986 through 1988 to that in 1997 through 1999 after the ban in lead shot for hunting waterfowl. Samuel and Bowers (2000) suggest that conversion to nontoxic shot conservatively reduced lead exposure in waterfowl by 50%. Similarly, in Canada, substantial decreases (52% to 90%, depending on species and location) in mean bone lead concentrations in hatch-year ducklings have occurred since nontoxic shot regulations were established (Stevenson et al. 2005). It was estimated that about 1.6 to 3.9 million waterfowl died each year in North America from lead poisoning before the national ban on lead shot for waterfowl hunting in 1991 (Bellrose 1959; Feierabend 1983). Lead poisoning from spent lead shot caused an estimated 2 to 3 percent of the annual losses of North American waterfowl between 1938 and 1954 (Bellrose 1959). Within six years of the ban, there was an estimated dramatic 64% decline in ingestion of lead shot by waterfowl on the Mississippi flyway (Anderson et al. 2000). Of examined ducks whose gizzards

contained ingested pellets, 68% of mallards, 45% of ring-necked ducks, 44% of scaup, and 71% of canvasbacks contained only non-toxic shot (Anderson et al. 2000). Samuel and Bowers (2000) demonstrated a 44% reduction in lead exposure (defined as >0.2 ppm in blood) and of black ducks in Tennessee comparing exposure from 1986-1988 with the post-lead shot ban from 1997-1999.

#### **Lead consumption by Loons:**

Pokras et al. (1992) examined 60 dead adults collected from 1989 to 1992, and 27 adults had ingested lead sinkers. Pokras and Chafel (1992) examined 75 dead loons of various ages from 1989 to 1990 and determined that 16 of 31 dead adult loons (52%) had ingested lead sinkers. Sidor et al. (2003) examined 254 dead or moribund breeding common loons and determined that 44% of loons died of lead toxicosis.

In eastern Canada, lead poisoning from lead fishing weight ingestion accounted for the largest percentage (22%) of deaths diagnosed in common loons from 1983 to 1995 in environments where loon breeding habitats and sports fishing activity overlapped (Scheuhammer et al. 2003b).

In the upper Midwest, Ensor et al. (1992) indicated that lead exposure appears to be a threat to loons in Minnesota, as 17% of those necropsied in their study died of lead poisoning, and Franson and Cliplef (1992) reported lead poisoning in 7 of 77 common loons from Minnesota and 2 of 17 from Wisconsin.

According to the Wisconsin Department of Natural Resources, about 35 percent of all loon deaths in Wisconsin are related to lead poisoning, from picking up lead shot or sinkers on the bottom of water bodies (Eisele 2008)

### **Causes of mortality in adult loon**

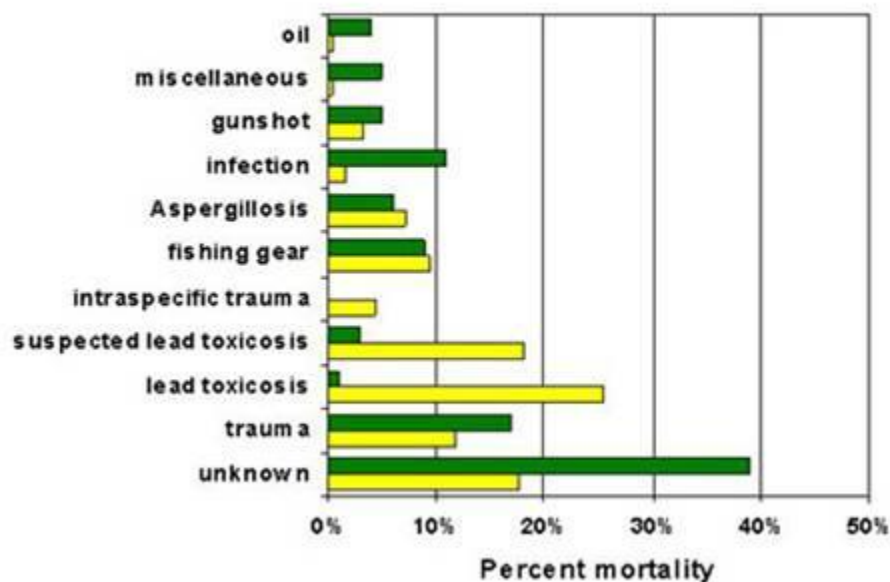


Figure from Mark Pokras, Tufts University Veterinary School. Yellow bars are birds in fresh water during the breeding season. Green bars are for wintering birds in salt water. Lead fishing sinkers are encountered in fresh water lakes.