

# **The Practical Biological Impacts of Banning Lead Sinkers for Fishing**

## **Position of the American Sportfishing Association**

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### **Issue**

Mortality in some waterfowl species has been linked to ingestion of lead fishing sinkers and has prompted several states to impose bans on the sale or use of lead sinkers. In response, the American Sportfishing Association has reviewed the existing science on the effects of lead on waterfowl populations to ensure further regulatory action is based upon the best available information.

### **Background**

The most publicized instance of lead poisoning (toxicosis) in wildlife is the well-documented death of significant numbers of dabbling ducks from ingestion of spent lead shotgun pellets expended over water. Lead shot was shown to cause at least two million waterfowl deaths each year, and significantly affected duck populations nationwide, before lead shot restrictions were enacted and alternatives developed.

Deliberations on the science, economic, and social impacts of a possible lead shot ban were thorough and involved all possible stakeholders including industry, sportsmen, environmentalists, and scientists. Key for the shooting sports industry was finding a substitute that had comparable ballistics to lead and did not cause an unacceptable crippling rate. In the end, the protracted discussion and depth of research stemming from that issue ultimately resulted in federal regulations that prohibited use of lead shot for waterfowl hunting in all 50 states (enacted in 1986 for phased implementation by 1991).

As early as 1988, some loon advocacy groups expressed concern about the death of waterfowl, especially common loons (*Gavia immer*), from the ingestion of lead fishing sinkers. However, it was not until 1994 when the Environmental Protection Agency (EPA) offered a proposed rule banning the nationwide use of lead and zinc sinkers for fishing that the issue gained national attention. The final rule would have prohibited “all persons from: 1) manufacturing, 2) processing, 3) distributing (selling), and 4) importing any lead- or zinc-containing fishing sinker (including brass) that is one inch or under in any dimension.” The proposal caused immediate public opposition and was in fact responsible for eliciting the largest number of comments on an EPA draft rule to date. The EPA subsequently withdrew the rule because of insufficient data to support its supposition that lead sinkers were adversely affecting water bird populations.

The enactment of new federal regulations banning the use of lead shotgun pellets had set the stage for further investigations into the effects of lead fishing tackle on wildlife, especially common loons (*Gavia immer*) in New England. In

1992, a study released by Tufts University School of Veterinary Medicine professor Mark Pokrus indicated approximately 50 percent of loons brought to the school for necropsy had likely died from ingestion of lead sinkers.<sup>1</sup> This study became the driving force behind the effort to ban lead fishing sinkers.

Ever since the Pokrus assertion that loons are at risk from lead sinkers, states within the summer breeding range of common loons have experienced increasing pressure from loon advocacy groups to ban lead sinkers, especially small split shot under ½ ounce in weight. Smaller lead sinkers are targeted because they may approximate the size of gravels ingested by loons to aid in their digestive process. Indeed, citing the Pokrus study as evidence, the state of New Hampshire in 1998 (effective in 2000) became the first state to ban the use of lead sinkers. New Hampshire was soon followed by Maine in 2001 (effective January 1, 2002) and most recently New York in 2002 (effective May 2004). In general these states have banned the sale of lead sinkers ½ ounce or less, with the exception of New Hampshire that prohibits the use of lead sinkers up to one ounce and lead jigs up to one inch in length. While each state has taken a different legislative approach, the background material furnished to legislators to substantiate the ban has generally been the same study by Pokrus.

### **Different Cases: Lead Shot vs. Fishing Sinkers**

Although the shotgun pellet and fishing sinker issues may appear similar, the quality and scope of the scientific data make each case remarkably different. In determining the impact of spent shotgun shells on waterfowl, a nationwide effort covering several years and samples from millions of waterfowl was conducted. Evidence from the research was scrutinized closely by hunters and the general public and ultimately proved, under close scientific review, that lead toxicosis from spent shotgun pellets shot over shallow water was a significant mortality factor affecting waterfowl populations.

Meanwhile, the most commonly cited evidence for sinker bans remains Pokrus' decade-old paper dealing with loon mortality from lead fishing sinkers. Despite data for this paper being limited in sample and geographic scope, its sweeping conclusion is that lead sinkers have the same potential to cause lead poisoning in aquatic species as shotgun pellets spent over water.

To fully understand the inherent difference between the two cases, one must contrast the number of lead sinkers introduced to a body of water versus the number of spent shotgun pellets. One single shell shot over water expends approximately 225 to 430 small lead pellets into the water, depending on the load, gun gauge, and shot size chosen by the hunter. Over the course of a waterfowl season, millions of lead pellets may be introduced to a body of water. This in turn leads to an increased chance of dabbling ducks, and other water birds, mistakenly ingesting the lead pellets as they select small rocks or grit to assist with their digestive process.

In contrast, it is not predetermined that any lead fishing sinkers will be left in the water, although it is likely that some will be lost over the course of a season. Fishing sinkers are reusable and unless the line snags on an obstruction or is broken by a fish, the lead is typically not left in the body of water.

As a result, the opportunity for ingestion of lead sinkers by water birds is greatly lessened by virtue of there being far fewer lead sinkers introduced to the body of water.

This is supported by research conducted during the shotgun pellet debate. Thousands of birds were examined and except for a very few “hot spots” where a concentrated fishing effort occurred in waters frequented by bottom feeding birds, the incidence of ingested lead sinkers by waterfowl was incidental to non-existent.<sup>2</sup>

### **A Note On Management**

A central tenant of fish and wildlife management is management for the optimal overall *population* level, not for the well being of any one *individual*. Simply put, sustaining populations is the goal of fisheries and wildlife management, not sustaining individuals. Mortality caused by human factors certainly can and should be controlled where necessary to benefit the health of a population. In populations of all living organisms there are known causes of mortality that contribute to the dynamics of the population. Some types are compensatory while others are supplemental. When a specific mortality level that is caused by man and can be controlled is a demonstrated threat to the sustainability of that species or group of species (an example of supplemental mortality), then action is taken to minimize that threat. The prohibition of lead shot shells for hunting waterfowl over water is an example of such an action.

### **Lead Sinker Impact on Loons**

It is not disputed that lead toxicosis may harm or kill loons and other water birds. This fact is well documented. The pivotal question is: are loon populations, and populations of other water birds, significantly reduced by lead sinker ingestion? Or phrased in a more comprehensive fashion: is mortality from lead toxicosis in loons and other water birds high enough to threaten self-sustaining loon populations? Based on available research the answer to both of these questions is no.

This determination is based on a comprehensive 1999 study requested by the U.S. Fish and Wildlife Service, Division of Federal Aid and conducted by the National Wildlife Health Research Center in Madison, Wisconsin. In this under-reported study, liver, blood, stomach, and radiograph samples were taken from 2,749 individual birds of 30 species, a significantly greater sample size than Pokrus studied. In addition, necropsy records of 36,671 waterbirds and bald eagles (*Haliaeetus leucocephalus*) from the files of the National Wildlife Health Center from the years 1975 through 1999 were examined.

The results showed that only 3.5% of common loons (from a sample of 313) had ingested lead sinkers and just 27 of 36,671 waterbird and bald eagle carcasses (0.007%) contained ingested lead sinkers<sup>3</sup>

The Fish and Wildlife Service study went on to reexamine the results of the Pokrus research on loons and lead sinker ingestion as well as five other related studies. The determination was that “[t]hese data are insufficient to evaluate the role of lead poisoning as a proportional cause of mortality in this

species, or its role in population dynamics. Likewise, there is insufficient data to understand the importance of this form of lead poisoning in other species in which it has been documented in the U.S...”

Lead poisoning, when occurring in larger birds, causes the bird to be more noticeable, more vulnerable to capture, and more likely to be brought forward for examination, thus causing examination in a disproportionate frequency in relation to the actual mortality of the population. <sup>2</sup> Samples collected over a wide geographic area and involving many specimens, such as occurred in the National Wildlife Health Center report, provide a more accurate profile of the actual occurrences in the wild.

An examination of the proceedings of a symposium given at the 115<sup>th</sup> meeting of the American Ornithologists’ Union in August of 1997 further bolsters the conclusion that lead sinker ingestion is not a significant factor in the health of common loon populations. <sup>4</sup>

- The largest U.S. breeding populations are found in Minnesota (over 4,600 pairs) and range to just over 100 territorial pairs in New York, Michigan, and New Hampshire.
- Canada (being the core of the breeding range) has the largest number of pairs (213,400).
- The population trend of common loons in the U.S. is stable to increasing in 12 of the 14 states where pairs occur.
- The two states where the population is decreasing are Michigan and Montana.
- In the United States loon populations are increasing in areas where they were extirpated and recolonizing in the New England states.

In the two states where decreasing populations were noted there are significant points to consider. In Michigan non-breeding pairs congregate from the entire Great Lakes region and this results in a larger number of adult loons summering in Michigan as unpaired, therefore not counted in the Michigan data of territorial pairs. Within the breeding range of the common loon, Montana’s population is disjunctive and most loon habitat is in valleys subject to development and habitat disturbance.<sup>4</sup> This evidence does not support the proposition that lead sinker ingestion is placing loon populations at risk.

In a separate request, the National Wildlife Health Center asked the Arizona Cooperative Fish and Wildlife Research Unit at the University of Arizona to estimate the impact of lost or discarded terminal fishing tackle on waterbirds. This limited and smaller scale study examined 15 sites “to assess the availability of lead sinkers, other fishing tackle and potentially harmful trash (e.g. plastics) to waterbirds at selected geographic areas...” It concluded “[b]ecause of the general lack of evidence of ingestion of sinkers by waterbirds across the United states, there may be little obvious justification for a nationwide ban on lead sinkers.” <sup>3</sup>

## **Conclusion**

Based on a review of the impact of lead sinkers on water bird populations, the American Sportfishing Association has found that insufficient data exists to warrant statewide bans on lead sinkers used for fishing. Further, the American Sportfishing Association has found that loon populations in the lower 48 states are stable and increasing in most cases, but that loon populations are subjected to substantial threats such as habitat loss through shoreline development.

The American Sportfishing Association acknowledges that lead toxicosis can kill water birds and lead fishing sinkers may contribute to this mortality. The American Sportfishing Association recommends that before further laws are enacted to restrict lead sinkers for fishing on a statewide basis, sufficient data must exist to demonstrate discarded lead sinkers are an actual threat to the sustainability of loons or other water bird populations. The American Sportfishing Association realizes that certain waters may be “hot spots” for ingestion of sinkers by water birds and encourages any restrictions of lead sinkers in those waters to be based on sound science that supports the appropriate action for that water body.

Furthermore, the American Sportfishing Association continues to encourage and supports voluntary angler education programs for the use and proper disposal of lead sinkers and urges state and federal fish and wildlife agencies to do the same. The American Sportfishing Association would be pleased to work with any federal or state agency, or the International Association of Fish and Wildlife Agencies, that wishes to address this issue.

<sup>1</sup> Pokras, M.A. and Chafel. 1992. Lead toxicosis from ingested fishing sinkers in common loons (*Gavia immer*) in *New England Journal of Zoology and Wildlife Medicine* 23(1):92-97.

<sup>2</sup> Peterson, R. M., International Association of Fish and Wildlife Agencies in comments to the U.S. Environmental Protection Agency on the proposed rule on lead fishing sinkers. December 1, 1994.

<sup>3</sup> U.S. Geological Survey, National Wildlife Health Research Center. December 1999. Prevalence and effects of lead poisoning resulting from ingestion of lead fishing sinkers and other fishing tackle on selected avian species.

<sup>4</sup> McIntyre, JW and DC Evers (eds). 2000. Loons: Old history and new findings. Proceedings of a Symposium from the 1997 meeting, American Ornithologists' Union. North American Loon Fund, Holderness, N.H.