



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

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

June 2011

#### **Issue**

Mortality in some waterfowl species has been linked to the ingestion of lead fishing sinkers, prompting proposals to impose bans on the sale or use of lead fishing 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 the 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 affect duck populations nationwide before restrictions were enacted on lead shot and alternatives developed.

Deliberations on the science and the economic and social impacts of a possible lead shot ban were thorough and involved all possible stakeholders, including industry, sportsmen, environmentalists and scientists. It was key for the shooting sports industry to find 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 triggered immediate public opposition and was in fact responsible for eliciting the largest number of comments that the EPA had received on a draft rule to that point. The EPA subsequently abandoned the rule because there was insufficient data to support the supposition that lead sinkers were adversely affecting waterbird 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 in New England. In 1992, a study released by Tufts University School of Veterinary Medicine Professor Mark Pokras indicated that approximately 50 percent of loons brought to the school for necropsy had likely died from the ingestion of lead sinkers.<sup>1</sup> This study became the driving force behind the effort to ban lead fishing sinkers.

Ever since the Pokras 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. Citing the Pokras 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, New York, Vermont and Massachusetts. While each state has taken a slightly different legislative approach, one element shared among all states is the banning the sale of lead sinkers ½ ounce or less. The background material furnished to legislators to substantiate the bans has generally been the same study by Pokras.

### **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 these cases 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 Pokras' 19 year-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 waterbirds, 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 the ingestion of lead sinkers by waterbirds is greatly lessened by virtue of there being far fewer lead sinkers introduced to the body of water. Studies indicate that sinker loss is variable but they do show that sinkers

have a considerable use-life. For example, a 2006 study in Minnesota found that “[m]ean rates of tackle loss were low: 0.0127/h[our] for lures, 0.0081/h for large sinkers, 0.0057/h for small sinkers, 0.0247/h for jigs, and 0.0257/h for hooks. Many anglers lost no fishing tackle on a fishing trip.”

In addition, as part of the 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 tenet of fish and wildlife management is management for the optimal *population* of a species, not for the wellbeing 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, which is caused by man and can be mitigated, is a demonstrated threat to the sustainability of that species or group of species (an example of supplemental mortality), then wildlife managers should take action 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 the ingestion of lead may harm or kill loons and other waterbirds; this fact is well documented. The pivotal question is: are loon populations, and populations of other waterbirds, significantly reduced by lead sinker ingestion? Or phrased in a more comprehensive fashion: is mortality from lead toxicosis in loons and other waterbirds high enough to threaten, or even impact, 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 Pokras 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 percent of common loons (from a sample of 313) had ingested lead sinkers and just 27 of 36,671 waterbird and bald eagle carcasses examined (0.007 percent) contained ingested lead sinkers.<sup>3</sup>

The study went on to reexamine the results of the Pokras 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...”<sup>3</sup>

Lead poisoning, when it occurs 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 occurrence of lead toxicosis in the wild.

An examination of the 2007 *Status Assessment and Conservation Plan for the Common Loon (Gavia immer) in North America* by the U.S. Fish and Wildlife Service 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 5,000 pairs) and Alaska (almost 6,000 pairs).
- Canada (being the core of the breeding range) has the largest number of pairs (246,575).
- The population trend of common loons in the U.S. is stable to increasing in 12 of the 14 states where breeding pairs occur.
- The two states where the population is decreasing are North Dakota and Washington.
- In the United States loon populations are increasing in areas where they were extirpated and recolonizing in the New England states, including those states where no ban on lead fishing tackle has been enacted (1,867 breeding pairs in New Hampshire, Maine, Vermont and Massachusetts). This recolonization has occurred regardless of whether restrictions on lead fishing tackle have been enacted.

In the two states where decreasing populations were noted, there are significant points to consider. Both Washington and North Dakota are on the fringe of the breeding range for the common loon. In both states populations are small and localized. The study acknowledges that there is inadequate data for a reliable statewide population estimate of loons in North Dakota.<sup>4</sup> Evidence does not support the proposition that lead sinker ingestion is placing loon populations at risk in those states.<sup>5</sup>

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>

## **The Human Dimension of Lead Tackle Bans**

The management of lead in fishing tackle is not simply a biological issue, but one that requires an understanding of the complex mixture of the biological, economic and social implications of imposing regulations. While there have been several alternative materials introduced by the fishing industry, each has limited applications in sportfishing and either does not provide adequate performance or significantly increases the price of recreational fishing equipment, or both. Tin and tungsten, which are two of the most highly touted alternatives, can cost from ten to twenty times more than their lead counterparts.

Through experience and a number of surveys and studies, the sportfishing industry and the states know that anglers are very price sensitive to the cost of fishing equipment and licenses. The associated cost of adjusting to a widespread lead ban will drive anglers away from the sport. The impact will be decreased fishing license sales and excise tax dollars, which is the primary funding of state fishery management. This will be a major detriment to fishery and wildlife conservation and, on balance, will likely result in more harm to waterfowl populations and conservations programs in general.

The enforcement and monitoring of a widespread ban on lead fishing tackle will be virtually impossible at the angler-level; this will be especially true after state natural resources agencies see the aforementioned loss in funding. Unless lead has been proven to be a significant threat to waterbird populations, regulating lead fishing tackle will stretch wildlife managers and department funds, resulting in little to no benefit to waterbirds.

As previously discussed, anglers are extremely price sensitive; when fishing tackle, notably sinkers, becomes more costly, some anglers will resort to pouring and manufacturing their own lead tackle. At-home manufacturing can be dangerous if lead is not handled properly and the process is not carried out in a well-ventilated area. While the cottage-industry is already common in the U.S., large restrictive bans on lead fishing tackle will cause the prevalence of this practice to spike, in effect turning a localized, often questionable threat to waterbirds into an indisputable and widespread threat to human health.

### **When Action is Needed**

The American Sportfishing Association does not deny that the ingestion of a lead sinker will most likely result in the death of a bird. When lead fishing tackle presents a scientifically demonstrated risk to waterbird populations, there are appropriate measures that should be taken to mitigate the threat. Because lead toxicosis of waterbirds is a highly localized issue, federal regulation is unwarranted. State fish and wildlife agencies hold statutory authority for the conservation of the living resources within their state's borders and even on most federal lands within them.

Federal regulation of lead fishing tackle manufacture and sale is not only scientifically unwarranted, but also unnecessary, as the state fish and wildlife agencies have taken action in response to perceived population threats. Additionally, the majority of states in the U.S. are uninhabited by the common loon, thus making any such ban entirely unjustified. Some waterways may have a higher incidence of lead fishing tackle-related deaths; these local hotspots, when the problem is scientifically documented and determined to be a population threat, should be addressed by the state agencies through *local* fishing

regulations that target the type(s) of fishing equipment that represents a specific threat to waterbird populations.

## **Conclusion**

Based on a review of the impact of lead sinkers on waterbird populations, the American Sportfishing Association has found that insufficient data exists to warrant federal or statewide bans on lead sinkers used for fishing. Further, the American Sportfishing Association has found that loon populations in the lower 48 states, and in Canada, are stable and increasing in most cases, and that loon populations are subjected to far greater threats such as habitat loss through shoreline development and lake level fluctuations; entanglement in gill nets; an increased predator base; and disease.

The American Sportfishing Association acknowledges that lead toxicosis can kill waterbirds 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 waterbird populations. The American Sportfishing Association realizes that certain waters may be “hot spots” for ingestion of sinkers by waterbirds 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 support voluntary angler education programs, where applicable, for the proper use of lead sinkers and urges state and federal fish and wildlife agencies to do the same. In addition, if anglers so choose, they may use alternate material sinkers. Anglers should use techniques to limit lead equipment loss such as assuring the line test is appropriate for the conditions, using sufficiently strong terminal tackle and understanding the best knots for the recreational fishing application. The American Sportfishing Association stands ready to work with any federal or state agency, or the Association of Fish and Wildlife Agencies, if they wish 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., Association of Fish and Wildlife Agencies (Formerly the 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> Evers, D. C. 2007. Status assessment and conservation plan for the Common Loon (*Gavia immer*) in North America. BRI Report 2007-20. U.S. Fish and Wildlife Service, Hadley, MA.

<sup>5</sup> Richardson, S., Hays, D., Spencer, R. and Stofel, J. 2000. Washington State Status Report for the Common Loon.