

Iowa Chapter of the American Fisheries Society

Position Statement on the Use of Lead Tackle

ABSTRACT

The following position statement on the use of lead fishing tackle was adopted in November 2011 by the Iowa Chapter of the American Fisheries Society (AFS) via majority vote of the membership. The Iowa AFS contends that in the absence of specific data regarding impacts to fish populations or human health, no additional restrictions on the use of lead in fishing tackle are warranted at present. The Iowa AFS does support 1) further research on the effects of lead fishing tackle on fish and wildlife, 2) increases in education of stakeholders about the issue of bioavailable lead, and 3) local science-driven processes headed by state fish and wildlife agencies to address site-specific lead concerns.

BACKGROUND

Fish and wildlife agencies are tasked with balancing real and perceived impacts of anthropogenic bioavailable lead. This natural element has historically been an integral part of the hunting and angling experience. Lead from spent ammunition and sport fishing tackle presents a challenge to both scientific and public perception. Reports about the impact of lead on fish and wildlife, the environment, and human health – whether real or perceived – create unique social and political challenges for managing agencies.

DESCRIPTION OF THE ISSUE

Lead is a naturally occurring element in the environment. It has no functional role in biological processes and can be toxic at relatively low levels of exposure. Manufactured lead items introduced to the environment, under some environmental conditions, can dissolve in aquatic and terrestrial systems; however, many times they can be relatively stable and remain intact for decades to centuries (SAAMI 1996). Loss rates of lead tackle are highly variable and are due most likely to factors such as aquatic habitat types, angler skill, and intensity of fishing pressure (Radomski et al. 2006). However, for bioavailable lead arising from ammunition and fishing tackle to have significant effects on biota at the organism- or population-level, the quantity of shot or tackle lost within a given area would have to be substantial (Goddard et al. 2008).

Documentation of fish ingesting spent lead bullets or shot does not exist. Also, evidence of ingestion of lead shot and lead bullets by amphibians or reptiles is not a widespread problem, and there is limited information documenting the incidence of lead shot, bullets, fragments, or fishing sinkers in the digestive system of these vertebrates

(Goddard et al. 2008). They further suggest that in no study has the ingestion of lead sinkers been found to demonstrate population-level effects.

Most reported mortality associated with fishing tackle is not related to exposure of fish to lead material used in fishing tackle, but rather due to the extent of injury, blood loss, exposure to air, and exhaustion during handling to remove the hook (Cooke et al. 2001). Studies linking lead exposure from ingested sinkers and jigs or other tackle to fish mortality have not been reported. However, it is largely regarded that lead from lost fishing tackle is often not directly ingested by fish as it is commonly accepted that hooks and leaded jigs embedded in the mouths of fish will work their way loose before the hook is swallowed (Goddard et al. 2008). If lead were consistently consumed by fish, elevated levels of this element would be detected in fish tissue analyses.

The U.S. Fish and Wildlife Service reported on the concentration of metals in a total of 315 whole-fish composite samples from 109 stations nationwide from late 1994 to early 1995. For lead, the geometric mean, maximum and 85th percentile concentrations ($\mu\text{g/g}$ wet weight) were 0.11, 4.88, and 0.22, respectively. The mean concentration of lead was significantly lower than in the 1980–1981 survey. Lead concentrations in fish declined steadily from 1976 to 1984, suggesting that reductions of leaded gasoline and controls on mining and industrial discharges have been the major source of lead in fish tissue (Schmitt and Brumbaugh 1990).

Results from the U.S. EPA (USEPA) Region VII Regional Ambient Fish Tissue (RAFT) Monitoring Program in Iowa indicate almost no detectable levels of lead from annual fish tissue sampling (U.S. EPA 2006). Iowa does not have an action level or level of concern for contaminant advisories for lead. We are presently unaware of any lead advisories in surrounding states at this time. The U.S. EPA notes that the top contaminants of concern in fish tissue are PCBs, chlordane, dioxins, and DDT. Lead appears rarely in consumption advisories nationwide.

GUIDING PRINCIPLES OF WILDLIFE AND FISHERIES MANAGEMENT

Individual fish and wildlife agencies are vested with the authority and responsibility to manage state fish and wildlife in the public trust, which includes the management of angling resources, the maintenance of the existing angling public, and the recruitment of new anglers. The cornerstone of state efforts has been science-based management of fish and wildlife resources so that populations are sustained at the optimal level in perpetuity. There is active debate over localized impacts of bioavailable lead on individual animals or small groups of organisms; however, traditional wildlife management is centered on population management, rather than concern for individual animals. With so much at stake, it is imperative that decisions to ban lead in fishing

tackle be founded in science where sound research methodologies lead to the documentation of population-level impacts.

Numerous studies have been conducted on the ingestion of lead sinkers (from fishing) in different waterbird species (e.g., Locke et al. 1982; Franson et al. 2003). The birds most commonly affected by lead poisoning from sinkers in those studies were the common loon and brown pelican. It should be noted that the studies investigating the cause of death in these birds were conducted mostly on birds that were found dead or in rehabilitation centers. Therefore, one would expect a higher incidence of lead-poisoned birds when only sampling dead or moribund birds, and estimated percentages of birds affected relative to the entire population would be skewed. To date, detrimental effects at the population-level of bird and other animal species have not been documented in North America, but some believe impacts at the population level should not be a prerequisite for corrective action.

Science-driven evidence can and has provided a basis for the establishment of changes in lead use when supported by scientifically collected evidence. Bellrose (1959) estimated that lead shot ingestion contributed 2-3% additional mortality across all waterfowl species, perhaps impacting these species at the population level. Following multiple studies, the U.S. Fish and Wildlife Service adopted a national ban on lead shot for waterfowl hunting. Studies since suggest that negative impacts have been largely ameliorated by the ban (i.e., Anderson et al. 2000). Any changes in lead use in fishing tackle should follow a similar model and be derived by a science-based approach that demonstrates a clear need for population protection from mortality associated with the ingestion of lead fishing tackle, and not due to the observance of death in individual animals.

IMPACT ON ANGLERS

Licensed angling effort is critical to the success of North American wildlife management. Anglers continue to be the primary source of funding for conservation efforts through the purchase of licenses and through an excise tax on angling equipment. Though past conservation efforts have focused on game species, other species have benefited as well.

Increased regulation of lead, not based on population science, will cause undue increases in the cost of angling and presents recruitment and retention issues to the sport. Although a variety of alternatives to lead sinkers have been proposed and investigated by the manufacturers of fishing tackle, it is not clear which alternatives will provide reasonable performance at reasonable cost. Alternatives range from 6.5 to more than 17 times the current cost of lead. In addition, the reduced specific gravity of

these substitutes requires the size of sinkers to be increased to the point where anglers have suggested their effectiveness is limited (Goddard et al. 2008). The establishment of financial constraints on anglers without documentation of a biological need unnecessarily compromises our ability to manage the resource. Increased regulation without notable benefit to the resource is unpopular with anglers and may be viewed as government interference at a basic level.

It is unknown how anglers would respond to increased regulation on the use of lead. However, it is generally accepted that approximately one-fourth of the nation's waterfowl hunters left the sport either temporarily or permanently when the national ban on using lead shot was enacted for waterfowl hunting (WAFWA 2010). If a statewide or national ban on lead fishing tackle resulted in a similar loss of anglers, it could jeopardize state and national efforts to recruit and retain anglers and properly manage these resources. However, there must be a clear level of concern that policy not be at the expense of population-level resources if data suggest such conditions exist.

FOUNDATIONAL STATEMENTS

In managing the impacts to fish and wildlife resources from ingested lead, the Iowa Chapter of the American Fisheries Society recognizes the following:

1. Ingested lead from sport fishing tackle is currently known to have detrimental effects on some species of wildlife at the individual-level. While the impact of ingested lead on individuals of certain waterfowl species is generally accepted, the population-level impact on fish and wildlife species is not currently documented. Therefore, the Iowa Chapter of the American Fisheries Society encourages additional research and studies on the effects of lead fishing tackle on these fauna.
2. Education on the issue of bioavailable lead to proponents and opponents of additional regulation, and the general angling public should be increased. Hunters and anglers are some of the original and most active conservationists and can be very helpful in reducing the amount of lead dispersed from sport fishing tackle. Therefore, it is important that Iowa Chapter of the American Fisheries Society members maintain the continued support of hunters and anglers when considering available management options and alternatives. Education, in lieu of unsupported regulation, will serve to bring all groups toward a more common consensus that will better serve the public-at-large. Through such action, all groups will be able to play a role in responsible future investigation and supported actions.
3. The premise of fish and wildlife management in North America is the maintenance of fish and wildlife at the population- and not the individual-level. The death of individual animals does not warrant additional regulation at the expense and success of anglers. It is tempting to support increased regulation or complete bans of lead fishing tackle based upon the current flow of popular thought and the assumption that there are negative impacts to aquatic environments, simply based upon knowledge of the properties of lead. However, such regulation is not based on population science. If site-specific concerns exist for these individuals, a local science-driven process headed by the state fish and wildlife agency, not a statewide ban, most effectively addresses the issue.
4. In the absence of specific data on population-based impacts or direct human health impacts, no additional restrictions on the use of lead in fishing tackle are warranted at present. However, fervent attention to future research regarding anthropogenic lead sources and their impacts on fish and wildlife at the population-level is imperative. If these impacts are documented, corrective action can be taken to ensure the future well-being of fish and wildlife at a population level. Therefore, it is premature to support additional regulation that could negatively impact anglers and the sport as a whole.

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