Lead Poisoning of Wisconsin's Birds

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Introduction

Lead is a toxic metal, yet tons of lead are deposited in Wisconsin's environment annually through hunting, fishing, and recreational shooting. Lead deposited in the environment will persist indefinitely and will not break down over time into less-toxic compounds. Mortality due to lead poisoning has been documented in a wide variety of birds. Lead toxicity can have sub-lethal consequences that can compromise avian survival and reproductive success. Signs of lead intoxication in birds can vary but include behavioral changes (e.g., loss of escape response); lethargy; anorexia; paralysis of the crop, esophagus, proventriculus, gizzard, legs, or wings; vomiting; diarrhea; incoordination or lack of muscle control; convulsions; anemia; and emaciation (starvation/muscle wasting).

Facts and Research Findings

The literature on lead poisoning of North American wildlife is extensive (see "Links" and "Additional Literature" below).

- Lead poisoning has been documented in 25 species of water birds.
- Poisoning from lead sinkers and jigs used in sport fishing is a significant source of adult Common Loon mortality, accounting for 46% of deaths in New England, 30% in Canada, and 17% in Minnesota.
- In Wisconsin, lead poisoning is a significant mortality factor for the Trumpeter Swan, an endangered species in the state. Of 110 Trumpeter Swan carcasses submitted to the Wisconsin Department of Natural Resources (WDNR) for post-mortem examination between 1991 and 2004, 34 deaths (~31%) were attributed to lead poisoning.
- Of 559 Bald Eagle carcasses submitted to the WDNR between 1994 and 2003, 68 (~12%) of those deaths were attributed to lead poisoning.
- A WDNR study published in 2004 found that some American Woodcock in Wisconsin are accumulating unusually high levels of lead in their wing bones. The exact source of the lead is not known at this time, but a dietary source for the lead is likely, and the study could not rule out lead shot in soils as the ultimate source of the lead.

- In 1992, at least 200-300 Canada Geese died as a result of acute lead poisoning from ingesting lead shot on a former trap and skeet shooting range near Lake Geneva in Walworth County, Wisconsin. The US Environmental Protection Agency reportedly spent ~ $1.88 M on a Superfund cleanup of the site, removing ~28,000 tons of lead-contaminated soils. The most recent large-scale lead poisoning event in Wisconsin occurred when ~200 Canada Geese were collected in 1999 and again in 2000 from a location in Outagamie Co.

- Nationally, lead poisoning of waterfowl and the Bald Eagle resulted in a 1991 federal ban on the use of lead shot in waterfowl and coot hunting. In 1997 alone, the U. S. Fish & Wildlife Service (USFWS) estimated that the ban on lead shot saved 1.4 million ducks. In Canada, a study showed a decrease in lead levels in bone in waterfowl of 50-70% as a result of the ban on lead shot for waterfowl hunting in that country. These and other studies have demonstrated that switching to nontoxic shot, defined as any shot type that does not cause sickness and death when ingested by birds, can help protect bird populations and improve the environment.

Nontoxic shot is becoming increasingly available. There are now nine shot types approved by the USFWS as nontoxic. Affordable, suitable alternatives also exist for lead fishing tackle. (See links below for sources, especially the REGI website).

- In order to help protect birds from lead toxicity, certain lead fishing tackle has been banned in New Hampshire, Maine, New York, Great Britain, the Canadian national parks and national wildlife areas, and in three USFWS wildlife refuges.

Research Needs

WBCI encourages research aimed at understanding the extent of the problem of lead poisoning in birds in Wisconsin. Suspected cases of lead poisoning in birds should be reported to your local WDNR Warden or Wildlife Manager, so that the WDNR can better monitor the extent of the problem in the state.

Recommended Actions

- Use fishing sinkers and jigs made from nontoxic materials such as tin, bismuth, steel, and tungsten-nickel alloy.

- Use one of nine shot types approved as nontoxic. Nontoxic shot is available at many locations where lead-shot ammunition is sold.

- Ask your local bait and tackle shop and your ammunition dealer to carry a variety of

non-lead products if they don't already carry them.

- Dispose of old lead sinkers and jigs properly. Turn these items in at your local hazardous waste collection site or contact a local metals recycling company. Keep lead out of the reach of children while you are awaiting proper disposal.

- Spread the word. Tell others about the problem and encourage them to switch to non-lead fishing tackle and ammunition. You can help by distributing "Get the Lead Out" educational "rack cards" to your friends, local sporting goods distributors, and sportsman's clubs. Go to leadpoisoning.htm to view the card online and obtain cards for distribution.

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Links to Information Sources

- WBCI "Get the Lead Out" webpage leadpoisoning.htm
- Wildlife Without Lead http://www.hawkwatch.org/lead_site/index.htm
- Raptor Education Group, Inc. "lead sinker exchange" webpage, with a list of nonlead tackle suppliers/manufacturers http://www.raptoreducationgroup.org/View_Special_Projects.cfm?title_bar=Lead%20Sinker%20Exchange&NewsID=11
- Lead and Wildlife: A Bibliography of Selected Citations – 2001 http://www.hawkwatch.org/lead_site/background/lead&wildlife_bibliography.pdf
- Let's Get the Lead Out! (Non-lead alternatives for fishing tackle) (Minnesota) http://www.moea.state.mn.us/reduce/sinkers.cfm
- Loons and Lead Poisoning (Tufts School of Veterinary Medicine) http://www.tufts.edu/vet/loons/loon.html
- Fish Lead Free (Canadian Wildlife Service) http://www.cws-scf.ec.gc.ca/fishing/index_e.cfm
- Lead Poisoning (Michigan) http://www.michigan.gov/dnr/1,1607,7-153-10370_12150_12220-26676--CI,00.html
- The Use of Nontoxic Shot for Hunting in Washington http://www.wdfw.wa.gov/wlm/game/water/nontoxicshotfinal.htm
- Lead Toxicosis in Michigan Loons from Ingestion of Lead Sinkers and Jigs: *A Real Problem* http://www.michiganloons.org/lead.htm

- Fact Sheet: Lead Poisoning in Migratory Birds (National Wildlife Health Center, Madison) http://www.nwhc.usgs.gov/disease_information/other_diseases/lead_poisoning.jsp
- Lead and Fishing – Sinkers and Animals (U.S. EPA) http://www.epa.gov/owow/fish/animals.html
- Lead Fishing Tackle (State Environmental Resource Center) http://www.serconline.org/lead/pkg_frameset.html
- LoonWatch: Get the Lead Out!: http://www.northland.edu/Northland/Soei/Programs/LoonWatch/Programs/GetTheLeadOut.htm
- Numbers of lead poisoned Bald Eagles by statehttp://biology.usgs.gov/s+t/imagefiles/b213f02.htm
- Environment Canada - toxicity of lead shot and sinkers http://www.cws-scf.ec.gc.ca/publications/papers/88/chap3_e.cfm
- Swans and lead poisoning (info from a die-off in 2000 in the Pacific Northwest) http://www.swansociety.org/issues/lead/0102lead.html
- Trumpeter Swan society - more on lead poisoning of swans http://www.trumpeterswansociety.org/washington/lead.htm
- Minnesota Public Radio - lead sinkers and poisoning (a still effective re-telling of this information) http://news.minnesota.publicradio.org/features/200005/09_engerl_fish-m/index.shtml
- Loon Preservation Committee (search their pages for info on loons and lead; other contaminants) http://www.loon.org/

Additional Literature

- Clark, A. J. and A. M. Scheuhammer. 2003. Lead poisoning of upland foraging birds of prey in Canada. Ecotoxicology 12:23-30.
- Sanborn, W. n.d. Lead Poisoning of North American Wildlife from lead shot and lead fishing tackle . Draft. HawkWatch International, 1800 South West Temple, Suite 226, Salt Lake City, UT 84115. (This 31-page review is the best single source of information and contains 125 references through 2002.)
- Scheuhammer, A.M., S.L. Money, D.A. Kirk, and G. Donaldson. 2003. Lead fishing sinkers and jigs in Canada: Review of their use patterns and toxic impacts on wildlife. Occasional Paper 108. Canadian Wildlife Service, Ottawa.
- Scheuhammer, A. M. and S. L. Norris. 1995. A review of the environmental impacts of lead shotshell ammunition and lead fishing weights in Canada .
- A review of the environmental impacts of lead shotshell ammunition and lead fishing weights in Canada. Occasional Paper 88. Canadian Wildlife Service, Ottawa.
- Strom, S. M., K. Patnode, J. Langenberg, B. Bodenstein, T. Scheuhammer, and B. Beard. 2004. Determination of the extent and source of lead contamination in woodcock (*Scolopax minor*) from Wisconsin. Wisconsin Department of Natural Resources Final

Report.

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